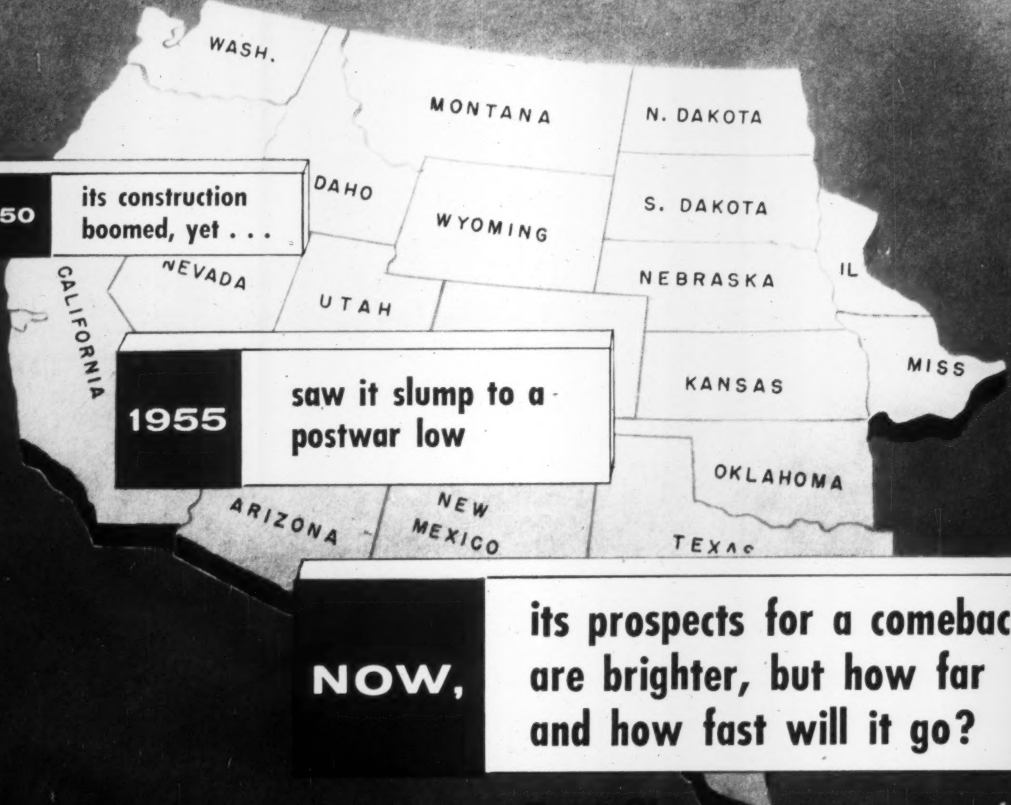
ENGINEERING NEWS-RECORD

What's ahead for . . .

The Bureau of Reclamation?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TEXAS

1950 its construction boomed, yet . . .

1955 saw it slump to a postwar low

NOW, its prospects for a comeback are brighter, but how far and how fast will it go?

Page 21

E B POWER GS N
UNIVERSITY MICROFILMS IN
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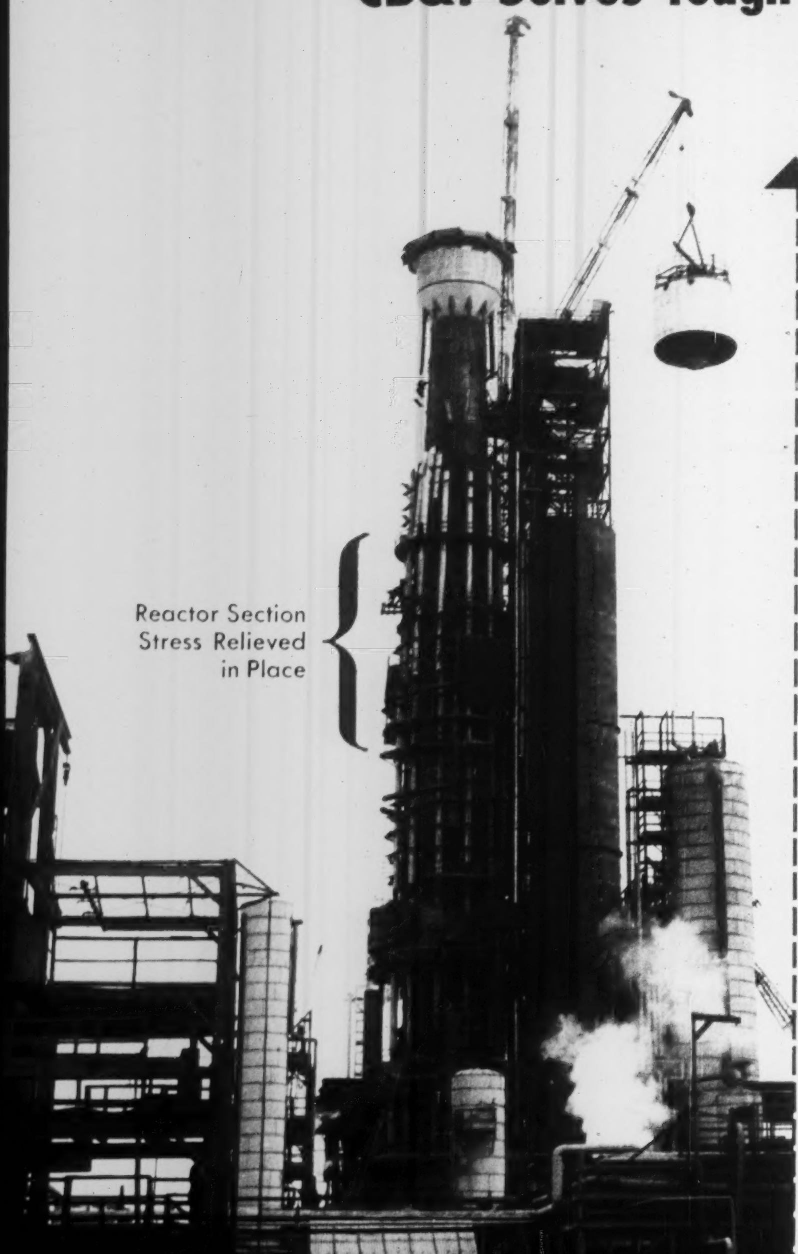
CB&I Solves tough erection problems on 360 ft. high Houdriflow Units at Toledo and Marcus Hook



360-ft. high Houdriflow unit at Marcus Hook during erection. It is one of two Houdriflow units fabricated at our Greenville and Birmingham plants through the Catalytic Construction Company for Sun Oil Company's Marcus Hook and Toledo Refineries.

Many problems confronted Chicago Bridge & Iron Company during the erection of two Houdriflow units that they fabricated and erected for the Sun Oil Company Toledo and Marcus Hook refineries. One was the lifting of 94-ton cooling coil sections 300 feet in the air. This was handled by derricks mounted on top of 283-ft. towers designed and built by CB&I especially for these jobs.

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Field stress relieving was an important problem that was successfully solved. Furnaces were built at Marcus Hook and Toledo to stress relieve 13 sections with internal and external heads, for each Houdriflow unit. The 70-ft. long reactor sections were stress relieved *in place* with 20-ton hot air furnaces mounted on the stair towers . . . *approximately 160-ft. in the air.*

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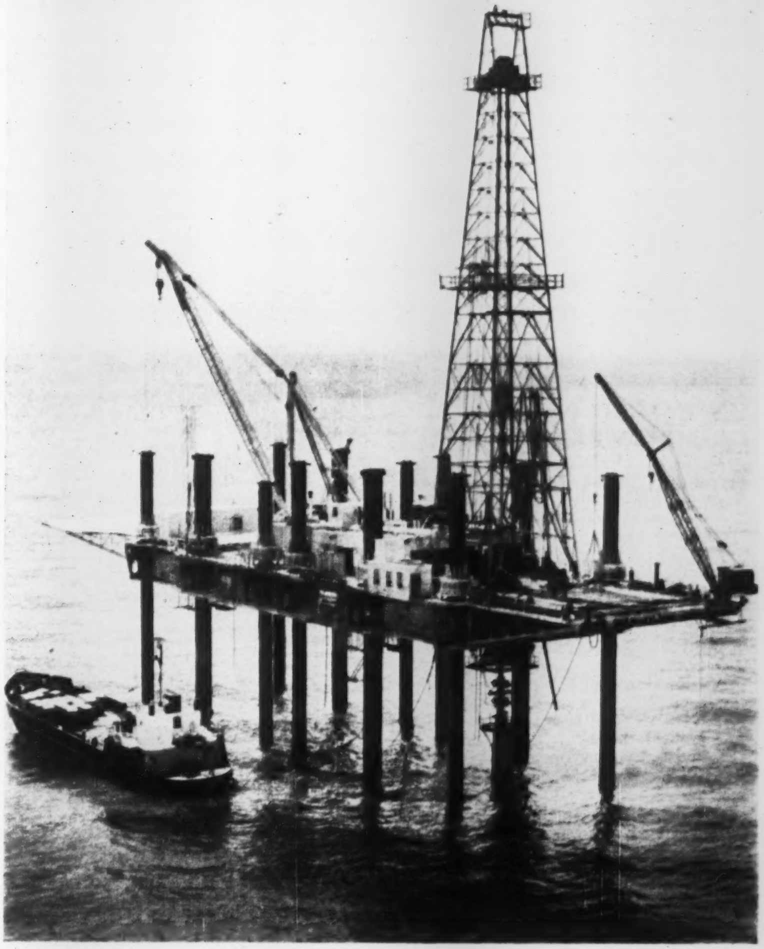
"Mister Gus" stands firm through 41 hours of storm



Designed and built by Bethlehem's Shipbuilding Division at Beaumont, Texas, this drilling platform has been drilling in a record 84 ft of water. Capable of working in 100-ft waters, it is also designed to be movable from one location to the next.

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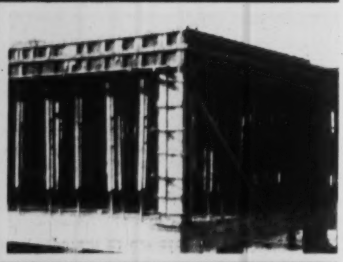

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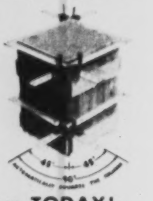

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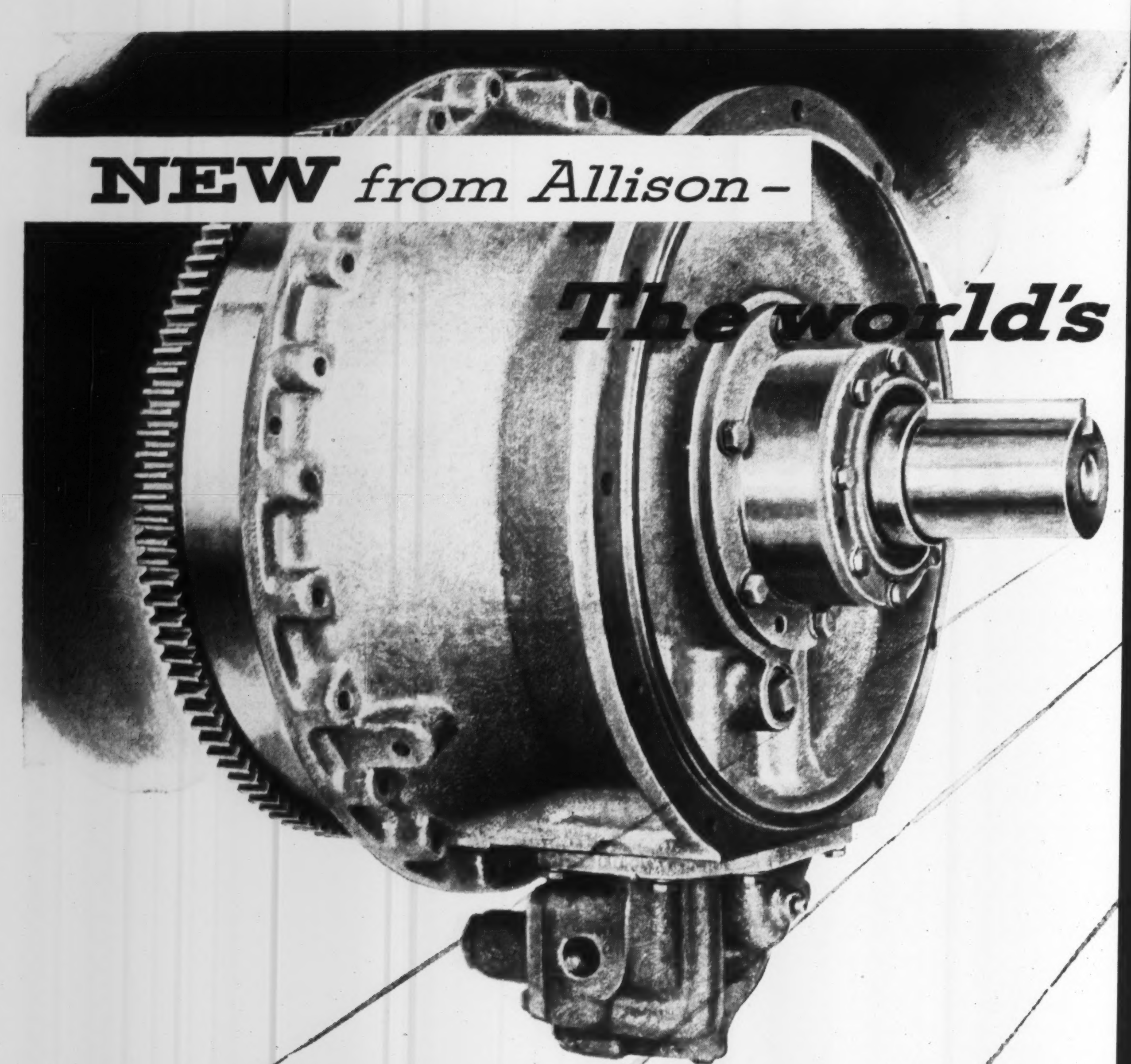

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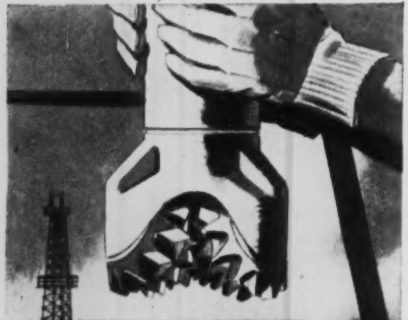

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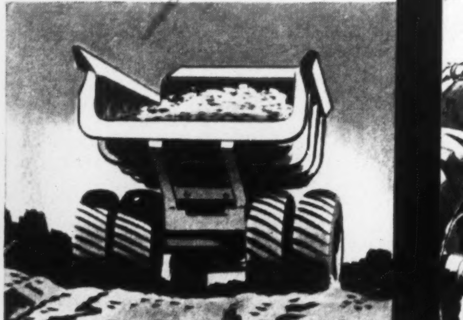

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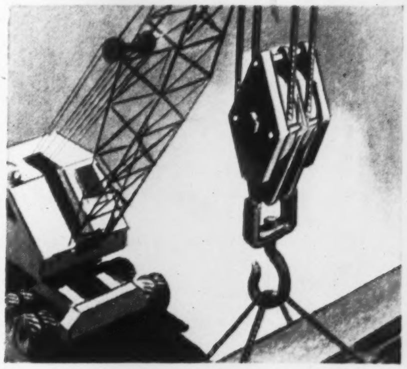
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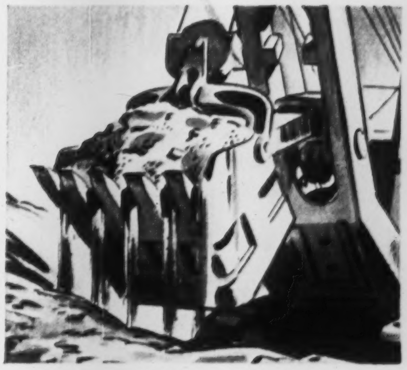
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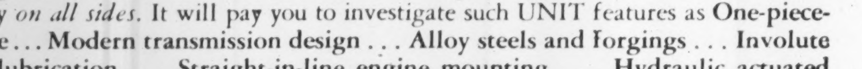

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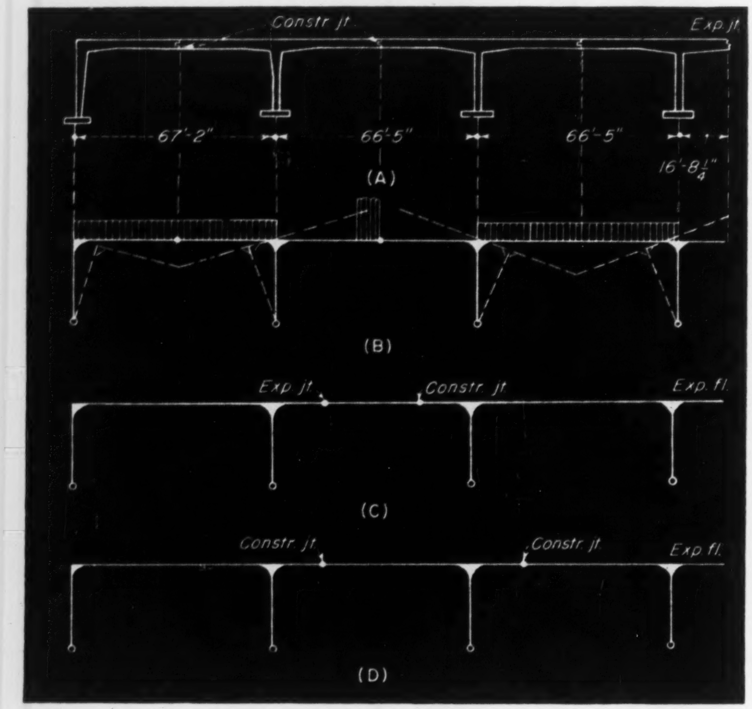


Warehouse Frames Unstable?

SIR: I have read with interest the report concerning the failures of rigid frames in recently built Air Force warehouses.

The frame details shown (ENR Jan. 12, p. 21) indicate three spans that are to be considered as one static unit. Each span has a construction joint near its center (see sketch A above). In designing such joints, special measures have to be taken to assure resistance to bending and to receive the shearing stresses at these points. The published detail does not show adequate measures to meet these requirements.

Therefore, under unfavorable load conditions, these construction joints will act as hinges, thereby dividing the three-span unit into four rigid panels connected to each other by swivel joints (sketch B). This construction is unstable.

To eliminate similar conditions in future structures, one of the schemes shown in sketches C and D can be used. However, special care should be employed in designing the reinforcement suitable to the statistical requirements. Because of the magnitude of the shear in a structure like this, all shearing stresses have to be assigned to the reinforcing steel, the major part being taken up by well distributed bent-up or bent-down bars, the balance by stirrups extending throughout the span.

HEINZ H. JANSSEN
Bridgeport, Conn.

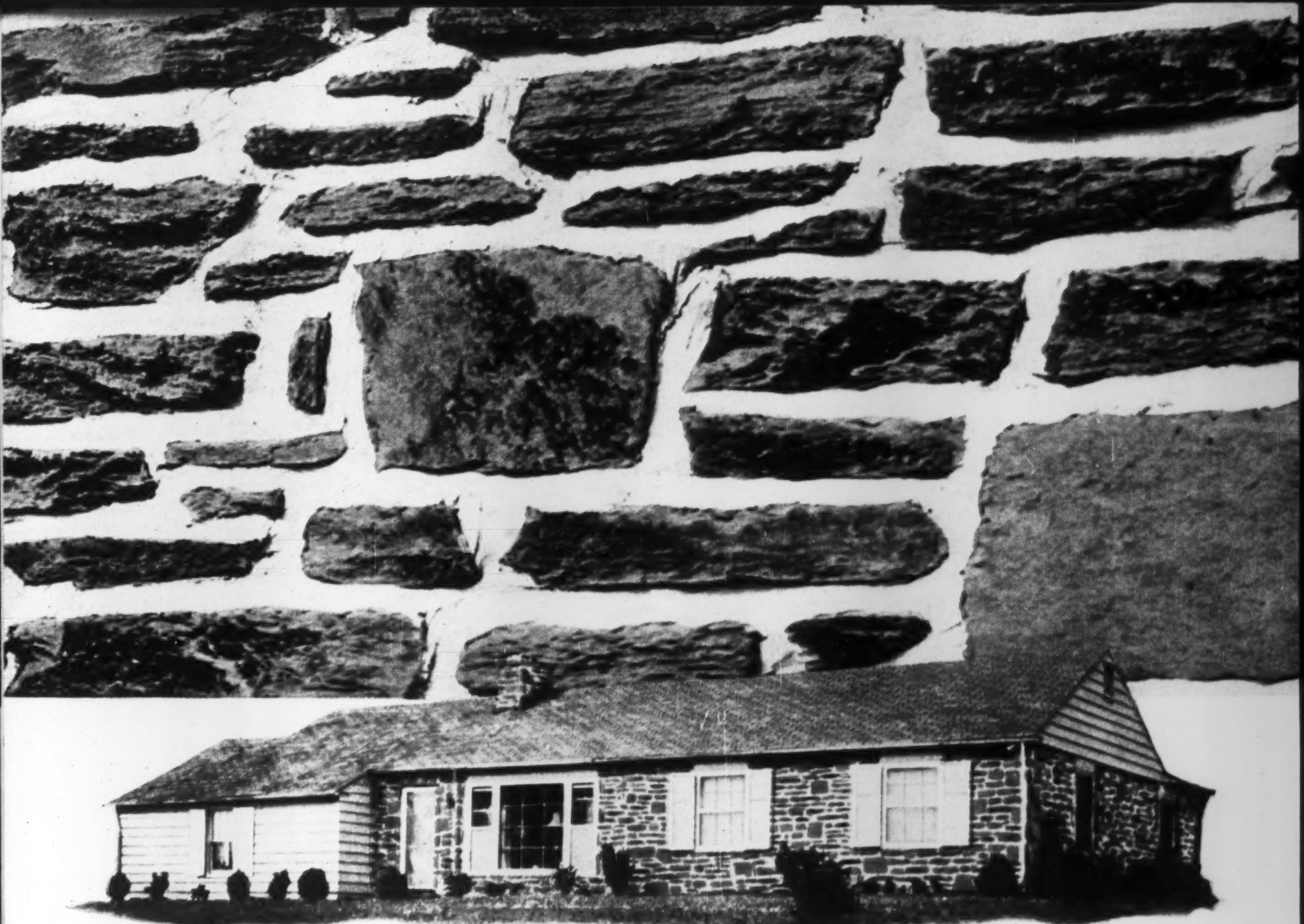
Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Waterway Charges

SIR—I read with much interest, but with considerable misgiving, the editorial entitled "Waterways Should Be Self-Supporting," (ENR Oct. 27, 1955, p. 124).

The question of waterway charges is not a simple one. Unfortunately, many people have spoken of it in terms depicting a fight between the railroads and the water carriers, with the latter in the favored position of a so-called "subsidized competitor." I submit that persons vitally involved



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Complies with ASTM and Federal Specifications for masonry cement which now include requirements for soundness (low expansion) in autoclave.

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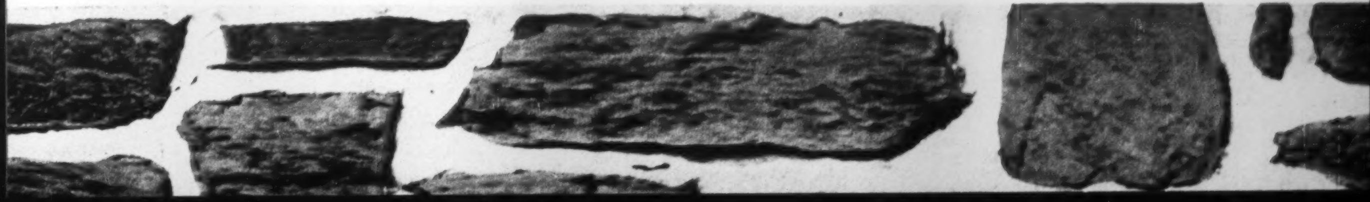

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have been overlooked—the American public. The user charge question should not be decided on the basis that it will aid the railroads or that it will harm the barge lines, but rather on its effect on the many millions of American citizens whose comfort and welfare depend so largely on our navigable waterways.

Time and space do not permit a full exposition of my position in opposition to tolls. However, there are a few facts which I do want to emphasize. Historically the United States government has, policywise, declared that the inland waterways, as is true of a part of our highway system, shall always be available to the public without the imposition of a user charge of any nature. A reversal of government policy at this time would certainly constitute a breach of faith and should not be undertaken without a full understanding as to whether or not the present policy is best for the people or that a change should be made.

Relatively, river transportation is not a big business, handling only a mere 6 or 7 percent of the nation's transportation, but to literally thousands of communities and industries it is practically as indispensable as the air the people breathe. Present regulatory laws, although designed to protest each mode of transportation against destructive practices of others, have not always worked out that way. The railroads have for some time now been allowed to pursue a rate-cutting program extremely harmful to the water carrier industry. In a great many cases, so-called water-compelled rates, much lower than those assessed by the same carriers in non-competitive territories, have been permitted to become effective, with the result that a heavy volume of river traffic has been and is being lost.

Now, if user charges are to be imposed, obliging river carriers to charge more for their services and at the same time the railroad water-compelled rate program is continued, it is perfectly obvious that considerable additional waterborne traffic will immediately disappear. As the diminishment progresses, the remaining tonnage, with increasingly higher tolls needed to pay the cost of river development and maintenance, will become so heavily burdened that gradually but surely it too will be eliminated. What then will happen to investments aggregating astronomical figures which have been made along the rivers in order to gain economic benefits and advantages? What will become of the cities,

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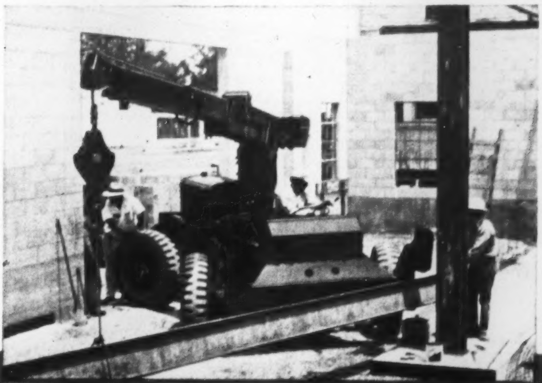

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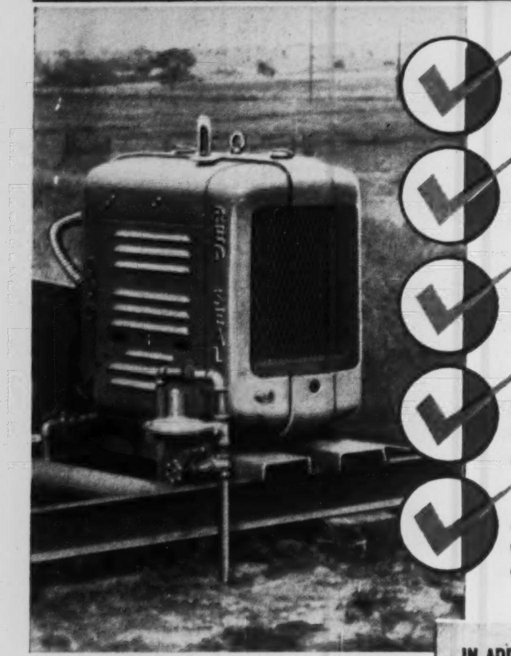

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towns and communities which have been nurtured by "old man river"?

A question of absolute fairness also comes to mind. Should river transportation pay the whole bill when navigation is only one use made of our multi-purpose waterways—should not user charges if imposed, also be collected from other users? I refer to users of domestic water supply, industrial water supply, domestic and industrial waste disposal, flood control, recreation and hydroelectric power. Should inland waterways alone be involved? What sane, sensible and fair reason is there for non-inclusion of the Great Lakes, the coastal harbors and connecting rivers? These latter, with improvements all provided at public expense, are not referred to when user charges are discussed.

The effective operation of all forms of major transportation is vital to the industrial and commercial life of our nation. Consequently I must express myself fully and freely when it appears, as in this instance, that aggressive activity is under way which will seriously injure a relatively minor carrier to the long-range detriment of the general public.

CARL B. JANSEN, PRESIDENT
Dravo Corporation
Pittsburgh, Pa.

CALENDAR

American Concrete Pipe Association, annual convention, Broadmoor Hotel, Colorado Springs, Colo., March 6-10.

American Railway Engineering Association, annual convention, Palmer House, Chicago, March 13-15.

Fifth Inter-American Sanitary Engineering Congress, Lima, Peru, March 19-25.

American Institute of Steel Construction, Eighth National Engineering Conference—plastic design in structural steel, Lehigh University, Bethlehem, Pa., April 4-6.

American Institute of Steel Construction, Eighth Annual National Engineering Conference, Lehigh University, Bethlehem, Pa., April 4-6.

Western Association State Highway Officials Conference, Phoenix, Ariz., April 10, 11, 12, 13.

Purdue Industrial Waste Conference, Purdue Memorial Union, Lafayette, Ind., May 15-17.

American Institute of Architects, annual convention, Biltmore Hotel, Los Angeles, Calif., May 15-18.

Prestressed Concrete Institute, second annual convention, Hollywood Beach Hotel, Hollywood, Fla., May 16-18.

Building Research Institute, annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont., May 21-22.

WINTER, SPRING, SUMMER, FALL

Cold mix from stock pile being used for patching.

How To Assure *Permanent* Pavement Patching—Hot or Cold—In Any Season

City street departments as well as county and state highway departments throughout the country are becoming more and more sold on the *extra value* of McConnaughay Weatherproof Emulsified Asphalt for pavement patching. Mixtures made with these emulsions assure superior results in any season... cold mixtures used immediately or stock-piled for future use... hot mixtures for on-the-spot patching, particularly in cold weather. You can also depend upon these emulsions for durability in application types of patching.

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960 E. 22nd, *Indianapolis 2, Ind.*
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R. R. #2, *Gary, Indiana*
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The dream pipe for which all engineers pray would be light as a feather, indestructible, pliable enough to bend around obstructions, and would be installed by a magical machine that digs the trench and extrudes, lays and backfills the pipe.

Needless to say, this will be in the far distant future. Until such a dream pipe is invented, water works officials and engineers are specifying the next best pipe—LOCK JOINT CONCRETE PRESSURE PIPE. It comes the closest to realizing their ideal specifications: long life at top carrying capacity because it never corrodes nor tuberculates; great strength to withstand internal pressure and exterior loading; versatility to meet the most difficult laying conditions, and minimum maintenance requirements over the years.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

GROWING CASUALTY LIST—Consequences of the precarious low bidding that prevailed particularly among new and inexperienced firms during 1954 and the first half of 1955 can be seen in the mounting toll of construction business casualties.

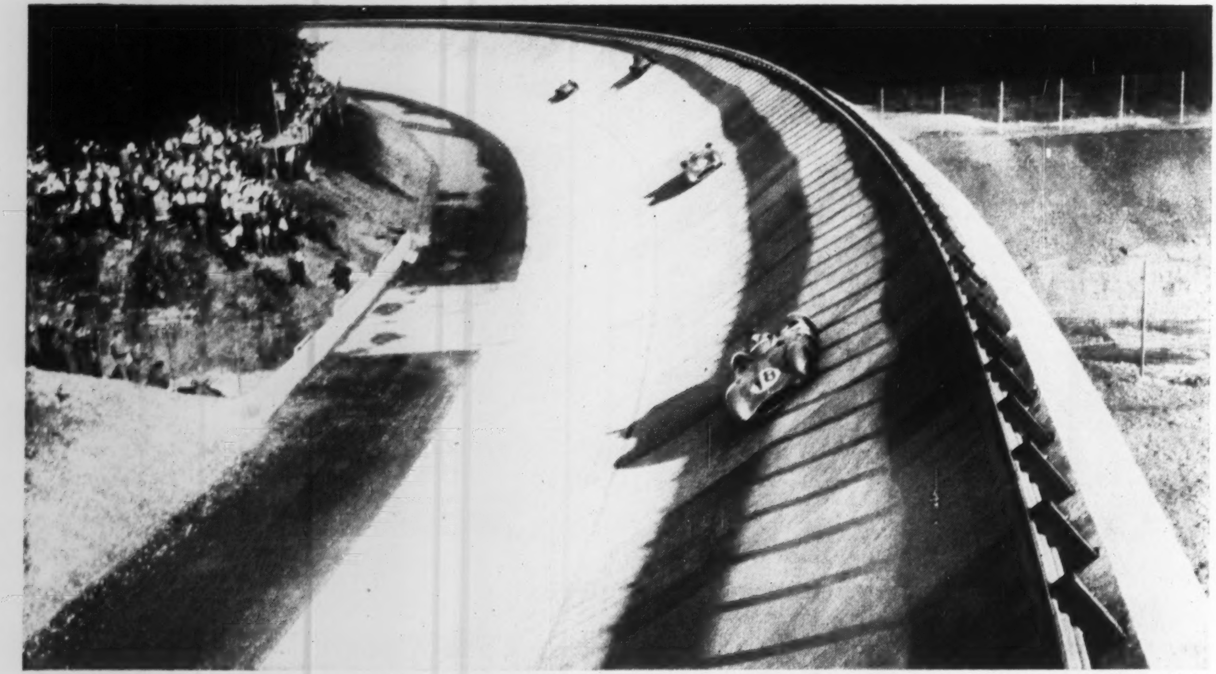
While failures in the first half of last year were 4% below the same period of 1954, they were 19% greater in the second half. And, 251 failures in the first eight weeks of this year represent a 24% increase over the same period of '55. All three types of contractors—general building, subs and heavy construction—have figured in this year's substantial increase in failures.

ACI SCUTTLEBUTT—Corridor talk at the American Concrete Institute's annual convention in Philadelphia last week (page 26) has it that the approved revisions of shear and diagonal tension requirements in the ACI code will be short-lived. Many members indicated dissatisfaction with the new rulings and are looking for a change in the near future. Everyone seemed to bemoan the lack of research data to form a sound basis for these requirements.

FINANCING WATER SUPPLY AND SEWERAGE—A bill given first reading in the Ontario Legislature last week offered the exciting prospect of an agency patterned after the Hydroelectric Power Commission of Ontario to have authority over all water resources of the province. This sounds vaguely like the proposal of a water resources board in California (p. 28) except that sponsors of the Canadian bill have in mind that the commission to be established would have provincial credit (maybe $2.5 billion for a 20-year program) for financing of municipal water and sewage plants. The plan was introduced by provincial Premier Frost and is expected to pass.

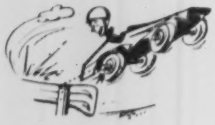
FINANCING WASTE DISPOSAL—A plan that would go to another extreme—private financing of sewage and industrial wastes plants on a lease-purchase deal—was presented at a meeting of the Missouri-Basin Inter-Agency Committee in Kansas City, Kan. Municipal Service Company of Kansas City, Mo., claims to have financial backing for a package deal of construction and operation of disposal plants as public utilities. The firm says it could make a go of it if given non-profit corporation status. This is not a brand new idea. The construction division of a big Philadelphia manufacturer went to the brink of entering the waste disposal business four years ago, but stopped short. Municipal Service Company's proposal is as yet untested.

TV FOR TRAFFIC STUDIES—With a major revision of the traffic flow pattern at one of the city's busiest intersections, New York's traffic specialists are planning another innovation—closed-circuit TV to scan flow in two directions at once.



Casting a shadow on cars racing by, Armco FLEX-BEAM Guardrail protects the edge of the track at Monza, Italy.

ITALIAN RACE DRIVER TESTS ARMCO FLEX-BEAM GUARDRAIL



---BY ACCIDENT!

A red Lancia racer was streaking around the new race track at Monza, Italy, at 170 miles per hour. Suddenly, a rear tire burst and the car skidded out of control to the top of the speed "saucer." It hit the Armco FLEX-BEAM Guardrail and caromed off to the bottom of the track. The driver got out of the car unhurt!

The Armco FLEX-BEAM? It was "just slightly bent."

You Get Same Safety

To engineers, the important point of this story is that Armco Guardrail will provide equally practical safety for motorists on regular roads and highways. You will find Armco FLEX-BEAM installed on the country's newest major expressways. And its low cost satisfies the limited budgets of county road departments.

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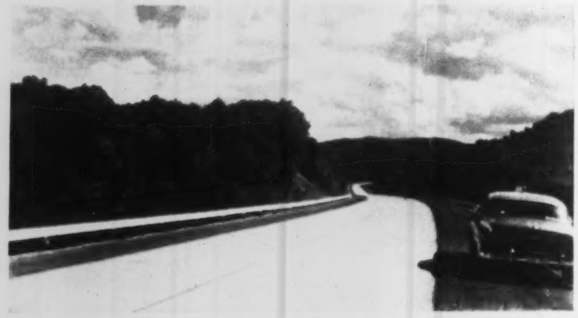
Motorists on the West Virginia Turnpike are protected by Armco FLEX-BEAM Guardrail.



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GUARDRAIL

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WASHINGTON OBSERVER

There are millions of dollars of construction in the new housing legislation the Administration is recommending to Congress for passage this year. Housing Chief Albert Cole spelled out the Administration's proposals at a press conference this week. Basically, they call for extending or liberalizing aid to housing programs already in operation.

Public housing should have 70,000 starts in two years—but the Administration wants to put back the requirement that cities have "workable urban renewal programs" approved. This is the provision Congress knocked out of the law last year.

Public housing designed for elderly people should go to $2,250 per room, compared with the present ceiling of $1,750 per room. Also, the Administration would insure mortgages up to 90% for apartments in which 25% of the units are to be occupied by people 60 years of age or older. Non-profit groups would get insurance on 90% of replacement costs up to $9,000 per unit on housing entirely for those 60 or over. There are also provisions to make single-family houses easier for older people to buy.

•

Projects to house families displaced by urban renewal would be eligible for bigger mortgages with longer maturities.

Funds for college housing loans would be increased $100 million over the present $500 million the housing agency has to lend. The Administration would raise the 2¾% interest rate Congress voted last year by a formula which would put the rate at 3⅛%.

Home improvement loans of $3,500 for five years would be insurable by FHA; that's up from present $2,500 for three years.

Builders and lenders would find it easier to sell paper to FNMA under a proposal to reduce the amount of Fanny Mae stock you have to buy at the same time you sell your FHA or VA mortgage to the agency.

•

Democrats will press for even more liberalization than this. Almost across the board they'll ask for changes to give more aid to housing than the Administration asks for—and election-year pressures guarantee they're going to get their way on many of the programs.

They'll push for at least 100,000 units of public housing a year; last year the Senate okayed 145,000 per year.

A move will be made to add public housing starts for the aged over and above the regular public housing authorization.

Interest rate on college housing will be held to its present low level, if the Democrats have their way.

Democrats would ease Fanny Mae restrictions to offset discounting of VA and FHA mortgages, which happens when money is tight.

Standby commitments to builders from FNMA will be urged. This would make it possible for a builder to count on FNMA to purchase his mortgage if he couldn't sell it elsewhere.

•

Democrats and Republicans alike are coming out for more military construction as part of their demand for more strength to meet the Soviet threat.

Senator Symington's investigation of Air Force needs will give Air Force generals a platform from which to argue their case for more bases. Senator Russell, top Democrat on military matters, backs Symington; so does Republican Senator Welker.

Secretary Wilson cut $500 million from the Air Force request for bases. This is one of the big levers the Democrats will be able to use in their investigations now starting.

POWER HYDRAULIC CONTROLS and hydraulic-actuated clutches keep even the roughest jobs rolling smoothly. Hydraulic system eliminates need for more than 100 mechanical parts. Self-compensating clutches need no close or frequent adjustments.

TOUGH, IMPACT-RESISTANT STRUCTURE with all-welded, stress-relieved lower and upper frame helps rig absorb digging shock . . . handle the worst rock jobs with little need for maintenance and repair.

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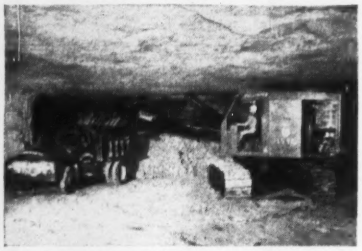

SPECIAL EXCALODER ATTACHMENT for underground loading or general bulk materials handling. The Excaloder features straight line bucket action and unusually low overhead clearance.

How to step up ROCK OUTPUT

Be ahead on every job with all these Link-Belt Speeder features

Whatever size rock rig you need, there's an advanced-design Link-Belt Speeder that can handle rugged work faster, easier, at less cost per ton or yard. Every Link-Belt Speeder rock shovel offers you Speed-o-Matic—the *true* power hydraulic control system. It's designed to make the operator's job so easy, so non-fatiguing that he'll utilize the machine to its full productive capacity—all shift long. And what a capacity! On-the-job figures show that Speed-o-Matic—even when the machine is wading through shot rock—accounts for output increases of up to 25% or more per shift!

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Faster, stronger — from boom tip to treads

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- Self-cleaning tracks and drive sprockets
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- Two-speed travel in either direction**
- Independent Swing and Travel that saves one hour a day in shifting time**
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***For most models*

LINK-BELT SPEEDER

Builders of a complete line of crawler and rubber-tired shovel-cranes

13,964

MARCH 1, 1956

ENGINEERING
NEWS-RECORD

President and Interior Secretary—mappers for . . .

The End of the Slump for Reclamation

Vincent B. Smith
Washington Staff

Reclamation development has hit its postwar low and is on the upgrade.

From here on, federal spending by the Bureau of Reclamation for construction of irrigation and related power facilities is bound to increase—if for no other reason, because practical politics demand it.

If the Republicans retain control, the rise will be gradual and limited. Should the Democrats take over, the increase in spending will go faster and farther.

Of nearly $3.5 billion voted for reclamation since Theodore Roosevelt put the government in the business in 1902, construction took $3 billion. The rest went mostly to operation and maintenance of completed projects, with about $65 million each having been spent over the years on general field investigations and on administrative expenses.

Not all the available construction money has been spent. And a few completed works have been paid for and taken over by local water users. But last June 30, the Bureau of Reclamation had $2.4 billion worth of completed and operating property on its books. Nearly all of this ($2.24 billion worth) was in dams, canals and power plants.

From a slow postwar start

Like other government agencies, the Bureau of Reclamation came out of World War II with big plans to combat the expected depression. As things turned out, no depression was needed to bring the plans to fruition. But as can be seen from a glance at the chart (next page), it took the bureau nearly three years to get construction really rolling.

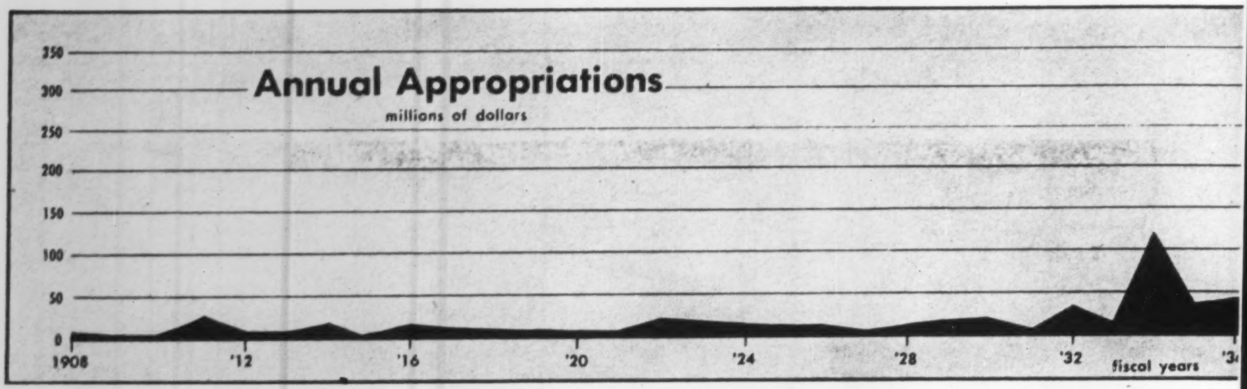
Reclamation's first big boost came in fiscal 1949. The Republican-controlled 80th Congress bowed to political pressures and voted $245 million of the $272 million that the agency received that fiscal year.

Under controversial Commissioner Michael Straus, the bureau had trouble with that Congress, and the difficulties continued during the four Democratic years that followed. But the Democrats gave the bureau the money it needed to keep construction booming until fiscal '54.

By that time, the Republicans controlled both budgeting and appropriating of federal funds. And they cut reclamation hard as part of their effort to balance their budget.

Political pressures, however, are just as potent in a middle-of-the-road Republican administration as under Democratic rule. Since the first deep cut, President Eisenhower has asked increasing amounts for reclamation each year and has constantly put the power of the Administration behind legislation to start two big, bitterly criticized new projects—the billion-dollar Upper Colorado River Development and the $160-million Frying Pan-Arkansas Trans-mountain Diversion Scheme in southeastern Colorado.

• Big jobs are not enough—There are other big jobs in the plans, like the $220-million Trinity River Diversion and Power Project authorized last year as an addition to the vast Central Valley Layout in California and the $90-million Yellowtail Dam on the Big Horn River in Montana for which



. . . After 50 years of ups and downs for USBR

starting funds were voted last year. But the big projects have to move along with those of middle size—plus many smaller jobs—to hold the organization together.

Total Reclamation spending for construction, including general investigations that prepare the way for new projects, has sunk below $150 million in fiscal 1955 and 1956. Starting work on some larger projects in the next few years, as now seems likely, will call for stepped increments rather than sudden boosts in this spending. Expenditures will climb gradually toward the $250 million a year that the National Reclamation Association proposes as a sound and feasible average figure.

Toward an imposed ceiling

But spending won't rise to any such level in the next five years if the present Administration stays in power. That, at least, is what Interior Secretary Douglas McKay told ENR last week. Rough estimate is that $200 million would be the likely top figure while the Eisenhower team holds management control.

Return of the Democrats to power would accelerate the coming upturn in reclamation. The Democrats could be counted on to cut quickly through the public vs. private power fight and plump heavily for federal development of hydro sites. Irrigation projects as a result would almost certainly get even greater subsidies from power revenues.

There are big potential projects under field investigation that could easily sustain an average annual expenditure of $250 million or more. The Upper Colorado project alone—embracing the river basin in five states—has possibilities that run into several billions. Only the initial phase of the project is covered in the stripped-down $760-million authorization bill now before the House.

As the Upper Colorado development moves ahead, more than 100 additional project units—irrigation works, dams and related facilities—will come up for consideration in the next 25 to 50 years. Some of them were approved last year in a much larger $1.6-billion Senate bill to authorize the first phase of the project which would include Glen Canyon and Flaming Gorge Dams.

• Big plans for the Missouri—In the Missouri River Basin, the Reclamation Bureau is studying two potential irrigation developments that compare in size and cost with the million-acre, $800-million Columbia Basin project served by Grand Coulee Dam in Washington.

A report is due in 1958 on the first of these potential projects. This development would lift water out of Garrison Reservoir in North Dakota and shunt it north and east to permit diversified farming of a vast area.

Not so far along are the bureau's field investigations for the second big Missouri Basin project. This one would take water backed up by Oahe Dam in South Dakota and channel it to a similar sub-humid area, now limited almost entirely to wheat.

• Work needed in Texas—In the coastal area of Texas, reclamation engineers are spending about $1 million a year on another broad-scale study that will produce a third big development, provided Texans submerge their antagonism to bureau activities. This would involve a 9,000 cfs canal taking water from the Trinity and Sabine watersheds in the Dallas-Houston area westward to dry West Texas.

There are big potentials, too, for future irrigation development within the Columbia River watershed.

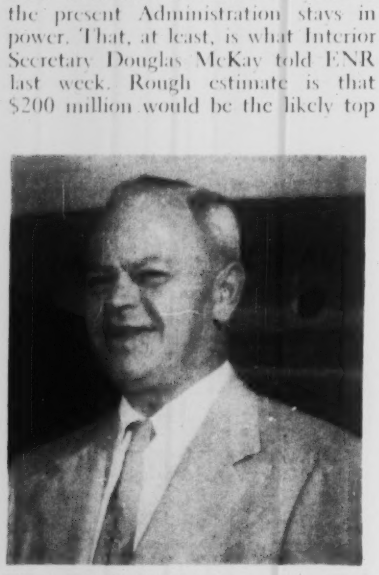
Here, as elsewhere, however, water users can pay only a portion of the irrigation costs and the remainder must be made up from some other source—principally power revenues, although muncipial water supply, since about 1939 has had a part as a reserve producer on some projects.

Irrigation development of the giant Columbia Basin project is tied to the power revenues from Grand Coulee Dam.

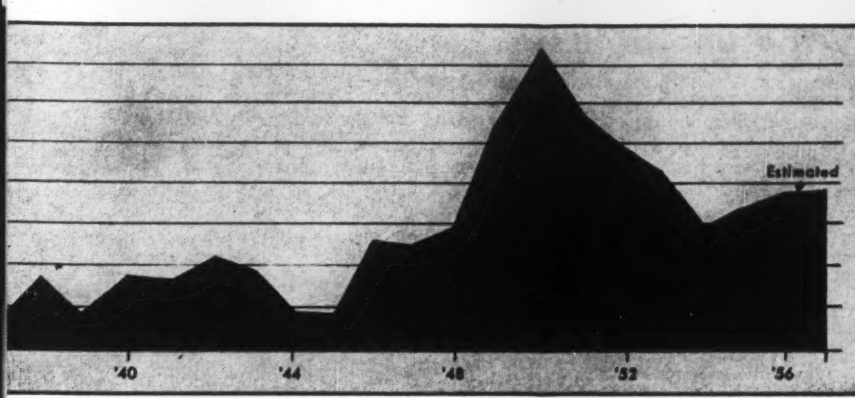
Similar tie-ins are provided in the authorizing legislation for the Foster Creek project near Chief Joseph Dam and the proposal for Oregon's Crooked River project above The Dalles Dam.

Even broader support from power revenues will be necessary, however, before the biggest irrigation potentials of the Columbia River Basin can be developed. Tremendous acreage in the Horse Heaven Lands along both sides of the Columbia near Pendleton, Ore., could be irrigated for high-income diversified farming.

• Basin-account idea gains favor—Pooling of Columbia River power revenues in a so-called basin account



W. A. DEXHEIMER, Reclamation Commissioner, spent over 25 years on bureau construction prior to his present job.



LAST 10 YEARS OF APPROPRIATIONS
millions of dollars

	Construction's Share	The Total
1947	$92.7	$121.9
1948	151.9*	148.9
1949	211.6	271.8
1950	272.0	367.2
1951	261.0	277.8
1952	207.7	241.9
1953	192.1	214.8
1954	163.3*	148.3
1955	128.5	168.2
1956**	134.7	184.7
1957**	161.3	192.7

**Estimated *Variation due to carry-over funds

would be a necessary prelude to any such costly development, however. The basin account got a black eye in the Northwest when it was tied to the rejected valley authority idea. But basin-wide pooling of revenues is now finding favor with Republicans as well as Democrats.

The Eisenhower Administration supports the pooling of receipts to help pay irrigation costs in two other huge basins—the Upper Colorado and the Missouri. Administration officials admit that a similar basin account may have to come for the Columbia. The possibility is being discussed and studied, but no decision has been reached.

Endorsement of the basin account for the Upper Colorado put the Administration clearly on record in favor of subsidized irrigation. From then on, there was no question but that "This Administration believes in reclamation," as McKay said last week. More important, the evidence was on the table that the Eisenhower team would stretch repayment possibilities to the last reasonable limit in order to justify new irrigation projects.

Personnel cuts were deep

Reclamation took the deepest cuts of any Interior agency. Full-time personnel was reduced progressively from 13,350 in Jan. 1953, to 9,350 at the end of 1955—a drop of 4,000 in three years. That is as far as the cut will go, Interior officials say. Fred G. Aandahl, former North Dakota Governor who is Assistant Secretary for Water and Power, says the bureau organization now is "just about right to do the surveys and investigations, make the final studies and designs, supervise construction, and carry on the operation and maintenance and other activities" for a "moderate program of reclamation" that will trend upward from the present bottom of about $150 million a year.

Because Reclamation is basically an engineering enterprise, the cut in the engineering force has been less drastic than among other personnel. Administrative people, economists, information offices and similar branches bore the brunt of the reduction.

• 2,100 engineers—Reclamation today has some 2,100 graduate, professional engineers doing engineering work, plus a number of others who utilize their engineering skills in administrative jobs. The engineers include 355 in executive or top-level engineering jobs, 605 classified in general civil engineering, 345 in construction, 216 in hydraulic, 77 in materials, 53 in structural engineering, 282 in electrical, and 110 in mechanical. A few engineers in other branches round out the list.

Supplementing this professional corps are large numbers of sub-professional people. More than 1,000 engineering aides work on survey crews and similar activities, in addition to numbers of cartographic and engineering draftsmen.

Many of the engineers—some 640 in all—work in Reclamation's world-famous engineering center in Denver. This centralized engineering clinic, with its laboratories and wealth of engineering information, supplies the scientific and technical know-how to attack any reclamation problem. Under Assistant Commissioner and Chief Engineer Leslie N. McClellan, the center does investigation, testing, research, design and construction not only for the bureau but also, under contract, for many outside agencies, including foreign governments.

• Important research—In many respects the personnel at the Denver engineering center is the most important in the entire bureau. Its investigations, of course, are basic to the whole reclamation business, determining both technical and economic feasibility of the multitude of projects that enthusiasts propose. In this connection the amount of investigation funds now allotted to the center (about $7½ million this year) is held to be reasonably adequate if they could all be channeled to seemingly promising projects. Too many congressmen, however, still exert pressure for studies to be undertaken on pet projects, which superficial examination would show to be economically unjustified.

At present, in the top, experienced engineer category, the center is sufficiently staffed to carry on an increasing volume of investigation, design and testing, but it would require considerably more young men if the load were to become much heavier. Such young men are also needed for replacements when the older men retire, and would also be useful should much-needed expansion of basic research be undertaken.

An example of basic research with very practical overtones is the present work of the bureau on reduction of evaporation losses in reservoirs. One intriguing possibility is the use of cetyl alcohol (obtained from the sperm whale) to cast an almost invisible film over the water surface. Lab results show an almost 50% reduction in evaporation, which if it could be extended to the field would

L. N. McCLELLAN, Assistant Commissioner and Chief Engineer, who is in his 37th year with the Bureau of Reclamation.

. . . For the bureau—only the unprofitable

double the capacity of reservoirs in hot countries—an incalculable asset.

• World training center—Accredited engineers who come to the bureau from friendly countries to study American reclamation methods get much of their technical information at the Denver center and the rest of it on projects in the field. Hundreds of engineers from overseas have taken bureau training and gone back to design and build great projects for their native lands.

And the bureau helps friendly nations also by exporting its engineering brains, on loan to foreign governments. Reclamation engineers are now at work in 32 countires, giving skilled engineering direction and advice in the planning, design, construction and management of water projects. Alumni who have retired from the bureau likewise spread their engineering skills around the globe as consultants and design chiefs for many important programs.

• Advancing the art—Spectacular achievements based on sound engineering brought world recognition to the bureau. Everyone has heard the names of Reclamation's great dams, from Hoover to Hungry Horse, but only those in the business can appreciate the engineering imagination and exhaustive detail that go into the development of a complete project.

Reclamation Commissioner Wilbur A. Dexheimer, who came up to his present post after years of professional experience inside and outside the agency, says the quality of bureau engineering and the value of bureau training for engineers cannot be overestimated. But he conceded in his interview with ENR last week that critics who say Reclamation over-designs, or "gold-plates," its projects have a point. High costs compel a shift away from too conservative engineering design, Dexheimer says.

Offhand and without stopping for breath the commissioner cited a score of engineering innovations that the bureau pioneered. His fast recital ran the whole gamut of engineering structures and materials, with emphasis on concrete and earthfill dams, foundations, tunnels and pressure penstocks. The bureau's concrete control manual is practically an engineer's bible all over the world, Dexheimer said, and the same is true for the earth manual.

Even with federal assistance and subsidy, Reclamation runs into resistance in the West today. Projects don't get united support of the western states as they once did.

Despite generous subsidies, federal reclamation has rolled up no astonishing total of irrigated acreage. Federal projects today furnish water to less than one-fourth of the irrigated acreage in the country. Chief reason: nearly all the self-supporting projects have been developed by private enterprise. Only the costly and fiscally infeasible projects have been left for federal development.

In the entire United States, there are 29.6 million irrigated acres—26.4 million of them in the 17 western states where Reclamation operates. Federal projects supply water to 7 million of these western acres.

Farmers on these lands repay a portion of the cost of the irrigation works. Depending on the estimated ability of the water users to pay, this portion may vary from 10 to 100 percent for different projects. Further, no interest is charged on the irrigation investment. And the water users repay their part of the first cost over a span of 50 years that begins only after a new project has been in operation for ten years.

This easy-payment plan now in effect has the endorsement of the present Administration. It is a far cry from the original 1902 requirement that the water users repay 100% of the costs in ten annual installments, interest-free. Even the liberal 60-year total period for repayment often is not enough. Many of Reclamation's 71 operating projects will have to wait much longer for repayment of the irrigators' share.

Economics are weak

Under cold-blooded fiscal analysis, federal irrigation hasn't a leg to stand on. It just can't pay its own way. But defenders of the program say the hard-headed critics are shortsighted, as well as unrealistic, when they call for a cut-off of subsidies. President Eisenhower has said that his Administration is dedicated to the purpose of using every drop of water on its way to the sea. In the West, that calls for irrigation.

And Administration officials like McKay, Aandahl and Interior Undersecretary Clarence Davis (who succeeded Ralph Tudor, principal architect of Administration policy on water and power), point out that reclamation projects take decades to complete. By the time the year 2000 rolls around and the Missouri Basin work nears completion, McKay says our needs for food and fiber will be vastly greater than they are today. Reclamation has spent less than $500 million on Missouri Basin projects so far. It has more than $2 billion of additional construction in prospect for that huge watershed.

The Republicans have put some checks on the hidden subsidies for irrigation that flowered under preceding administrations. They have stopped the use of new projects of the so-called interest component to subsidize irrigation. Under a 1944 opinion of the Interior Department Solicitor, never repudiated by Congress, the Democrats were able to withhold the interest payments on power features of a project and use the money to repay irrigation costs.

Also the present Administration has gotten agreement on a uniform system of cost allocations for multi-purpose projects. And it thinks it has made progress on application of uniform standards for estimating benefits and costs. These standards don't guarantee sound projects, but they do help in judging proposals on some kind of uniform basis.

• USBR would welcome review board—Like top people in some other departments, Interior officials would welcome a board of review in the President's office to screen project proposals. As it is now, political pressures occasionally force officials to approve marginal projects "with their eyes closed and their fingers crossed."

But the Republicans wholeheartedly back a continued reclamation program, with subsidies plainly exposed and identified. They would pay back the power costs with interest in 50 years, and then use power revenues after that date to subsidize repayment of irrigation costs, without interest. And they would encourage formation of conservancy districts around irrigation projects, with power to levy taxes on real property and thus collect some of the irrigation repayment money from secondary beneficiaries.

Indirect benefits are part of the Republican argument for irrigation. As Aandahl puts it, the Administration sets first the direct benefits that can be figured in actual monetary returns, rather than a combination of all benefits, including improvement of the local economy.

But the secondary benefits have to be given some weight in order to justify any federal irrigation project. And the Reclamation Bureau has figures to show how increased federal income tax returns from typical irrigated areas more than compensate—sometimes in one year—for the total federal cost of the irrigation works.

The favorable arguments are more than enough for either party—Republican or Democratic. Reclamation seems sure to fare well, no matter who is in power.

Tunnel of Trouble

Honolulu has new trouble with ill-fated Wilson tube

Honolulu officials finally have agreed on a way to finish the Wilson Tunnel through Koolau Mountain (ENR Feb. 9, p. 225). Now they are faced with a new problem: financing 7 mi of approach roads.

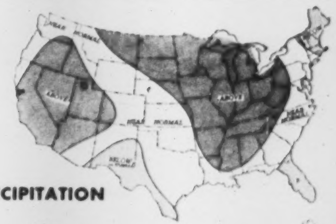
Unless funds are found soon, there's a strong possibility that when the tunnel is completed—probably by October 1957—there will be no approaches to serve it.

Much of the money earmarked for approaches was used up by costs of litigation and delay as well as by extra expenses agreed to in settling the tunnel dispute with the contractor. The dispute followed an August 1954, cave-in that killed five men and raised questions of responsibility, liability, and how future boring should proceed. Honolulu and the contractor came to terms last month, and the final 860 ft of tunnel will be constructed with heavier steel and lining.

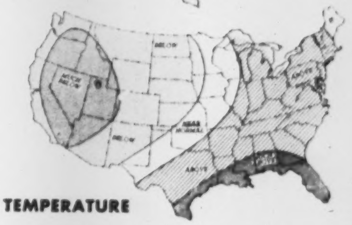
Approach roads are expected to cost around $750,000, and the city-county government now has only about $250,000 left out of a $6-million tunnel bond issue fund. A 2.7-mi sector of road already is scheduled to be built by the territorial government with federal aid. But plans called for the rest to be built from the bond issue.

As a territory, Hawaii must have its bond issues approved by Congress if it exceeds prescribed debt limits. Two such issues were authorized by the 1955 Territorial Legislature but they still need Congressional approval. One is a $6-million issue for a second parallel tunnel bore. This is to be floated by the city-county. The other is a $50-million issue by the territorial government to speed up its highway program.

If either issue is approved by Congress before June, territorial and city-county engineers expect to tap these sources for funds and come close to meeting their construction deadline. If not, there may be a delay of as much as 18 months from the time the tunnel is completed to the time it will be in use.



PRECIPITATION

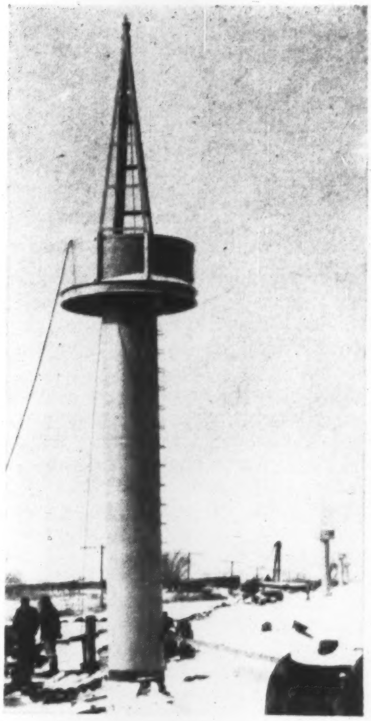


TEMPERATURE

30-Day Weather Outlook

The Weather Bureau's 30-day outlook for the period from mid-February to mid-March calls for temperatures to average below normal in the western half of the country, with greatest departures in the Plateau Region. East of the Mississippi above normal temperatures are predicted, with warmest weather along the Gulf Coast.

Precipitation is expected to be subnormal in New England, the South Atlantic States, and the Southern Plains. In the remainder of the nation above normal amounts of rain and snow are indicated.



To Protect Well Against Floods

Near Kansas City, the Kaw River has flooded an adjacent water-bearing aluvial sand deposit under as much as 13 ft of water. To assure continuous supply from wells being dug there, the Kansas City Suburban Water Co. specified that well casings shall rise 25 ft above ground level. The "warhead" is simply the derrick necessary for pump and well maintenance. There will be nine such wells, each having 42-in.-dia steel casings.

Denver Plans for the Jet Age

Denver has unwrapped a master plan for $35 million worth of "jet-age" improvements at Stapleton Municipal Airport.

The expansion plan, presented to six airlines serving the city, calls for:

- Setting up an authority to operate the airport. The authority would be empowered to issue revenue bonds for capital improvements without voter approval. It would also keep the revenue in a separate fund, instead of sending it to the city's general fund. Both of these powers require charter amendments.
- Scrapping three runways, lengthening two others and constructing a new one at a cost of $16 million. The present two east-west runways—6,486 and 10,000 ft long—would be extended to 11,300 and 12,000 ft. Two diagonal runways would be discontinued because they intersect the major runways and cannot be expanded sufficiently. The present 6,998-ft north-south runway—now too close to the terminal area—would be replaced by a new 10,000 or 12,000-ft one.
- Increasing landing charges to airlines to 600% of the current rate. Since 1940 Denver has been charging airlines at a rate of 3.43 cents a thousand pounds for a typically-loaded DC6. And the lines have been paying $3.33 for every such plane using the airport. This rate is less than any other major airport, except for the old Kansas City facility.

The six airlines using Denver's airport—United, Continental, Braniff, Frontier, Western and Trans World—have agreed to form committees to study the expansion plan. The committee will report back to city officials with proposals in three areas: facilities, legal problems and financing.

Airline spokesmen say they hope to make their proposals in time to place necessary municipal charter amendments on the ballot for the primary election in September.

Tunnel to End Slide Hazard

The Western Pacific Railroad will construct a $1.8-million, 3,100-ft tunnel in California's Feather River Canyon where a slide blocked the main line for two weeks late in December.

Studies by railroad engineers showed that rock formations at that point are unstable and future slides might occur.

Ultimate-strength design adopted for first time as . . .

ACI Convention Approves New Code

The 52nd annual convention of the American Concrete Institute voted unanimous approval of an updated 1951 code at its meeting in Philadelphia last week.

Perhaps most significant of the revisions to the code is 601-B, which introduces ultimate-strength design as an alternate method to the straight-line elastic theory.

Speaking before the revisions session, Eivind Hognestad, manager of structural development section, Portland Cement Association, described the overall significance of the method and its advantages. He pointed out that ACI has not introduced it without careful consideration. There have been over 10 years of study. According to Hognestad, the time is now ready to put the method to use. Toward this end, several papers presented at the convention went into the subject in detail.

Areas of the building code where future improvement is expected are those that deal with shear and diagonal tension. Rigid-frame failures at Wilkins Air Force Base (ENR Aug. 25, 1955, p. 23) resulted in a subsequent investigation by consulting engineers Ammann & Whitney of New York that yielded a report which has been largely responsible for expediting new revisions to Chapter 8. These require when calculating shearing stress that web reinforcement shall be provided to carry at least two-thirds of the total shear at the section or the excess over the allowable concrete stress, whichever is greater. Also, web reinforcement and negative steel are now required to extend past the inflection point in continuous or restrained beams or frames. The most notable of the few convention amendments to code revisions as published for discussion in the ACI Journal, Dec., 1955, specified that T-beams will continue to be designed for shear as under the 1951 code.

More than once the questions of those in attendance helped to open up new avenues of improvement in existing rulings. A query as to why the code required a minimum area of 120 sq in. for columns drew the dubious conclusion that it had been in the code for a long time. A question, "Why isn't minimum reinforcing specified for beams?" resulted in the reply that it was possible by too literally interpreting the code to end up with a beam more heavily reinforced transversely than in the direction of flexure. This could occur if the transverse temperature streel exceeded the required longitudinal steel.

Attack on current problem

Papers and reports presented during the four-day meeting covered a wealth of topics and were well attended. The program began with the proposed standards and committee reports, followed by technical sessions on prestressed concrete, shrinkage of concrete, construction and design, then an open session of ACI Committee 115, research, and concluded with an afternoon panel discussion on "current concrete problems."

A report of ACI Committee 214 on "Evaluation of Compression Test Results of Field Concrete," included the following recommendations on cylinder tests: "Not less than three cylinders should be made each day to be broken at 28 days, and one or more additional cylinders to be broken at 7 days. . . . The average of all 28-day strength tests representing each class of concrete, as well as the average of any five consecutive strength tests . . . should be equal to or greater than the required concrete strength, f_{cr}, and not more than one strength test in ten should be less than the specified design strength, f'_c."

A paper at the prestressed concrete session by J. R. Janney, E. Hognestad, and D. McHenry—all of Portland Cement Association, Chicago—compared the performances of beams reinforced with various types of prestressed and conventional reinforcement. Test results of nineteen 6 x 12-in. rectangular beams loaded at the third-points of a 9-ft span were given, of these, 3 were pretensioned, 3 post-tensioned with grouted tendons, 5 post-tensioned unbonded, 3 post-tensioned unbonded with deformed bars, and 5 with conventional deformed bar reinforcement. Conclusions reported included:

- The strength of pretensioned beams and corresponding post-tensioned beams with bonded tendons were nearly equal, and 20% to 40% higher than that of the unbonded post-tensioned beams.
- Mid-span deflections were less for prestressed than for conventionally reinforced beams in the working range, while at loads near the ultimate the reverse was true.
- The prestressed beams were more elastic than the conventionally reinforced beams with respect to recovery after removal of loads.

The lift-slab erection of the 6-story Litchfield County Hospital at Winsted, Conn., (ENR Feb. 2, p. 43) was one of four papers heard by those attending the construction session. The others were construction descriptions of the Mackinac Bridge piers, a 290-ft dome for a new sports stadium in Havana, Cuba, and lining the Tecolote Tunnel near Santa Barbara, Calif.

Boyd G. Anderson, of Ammann & Whitney, New York City, spoke to the design session on the rigid-frame warehouse failures at Wilkins Air Force Base (ENR Nov. 10, 1955, p. 21). A translational shell described by Prof M. G. Salvadori, Columbia University, behaved in accordance with assumptions of thin-shell theory. A translational shell is one generated by moving a vertical curve parallel to itself along another vertical curve, generally at right angles to the plane of the moving curve. Prof. Salvadori showed slides and described a test to destruction of a 30 x 45-ft shell of this kind in Italy. Other design papers were on "Tensile Crack Exposure Test of Stressed Reinforced Concrete Beams" by T. B. Kennedy of the Corps of Engineers, and "Practical Applications of Ultimate Load Design" by A. L. Parme of Portland Cement Association, Chicago.

Officers named, awards made

Announcement of the new president was made at the awards luncheon. He is Frank Kerekes, dean of the faculty, Michigan College of Mining and Technology, Houghton, Mich.

Elected a vice-president was Douglas McHenry, director of development, Portland Cement Association. Walter H. Price, head engineering laboratories, U. S. Bureau of Reclamation, Denver, who was elected for a two-year term as vice-president last year, continues in that office.

Elected to ACI honorary membership was Morton O. Whitney, dean emeritus of the College of Engineering, University of Wisconsin, a past president.

The Henry C. Turner Medal was awarded to Franklin R. McMillan, a consulting engineer of Asheville, N. C., and past-president of ACI—"for forty years of outstanding leadership in discovering and disseminating knowledge of the basic principles of concrete and concrete construction."

John I. Parcel, a partner in Sverdrup and Parcel, St. Louis, was presented the Alfred E. Lindau Award "for inspired authorship and teaching of structural principles applicable to reinforced concrete design."

As Ways and Means Committee approves . . .

Highway Tax Bill Steps Forward

Federal highway legislation gained new ground last week when the House Ways and Means Committee approved the financing plan to be incorporated in the revised Fallon Bill.

The tax bill is scheduled for a formal vote to report it out this week. Meanwhile, construction and authorization features of the 13-year highway-building program contained in the Fallon Bill are being considered by the House Public Works Committee. This separate measure—expected to be reported out by the committee within two weeks—will be teamed up in one package with the tax bill and sent to the House.

• **The financing plans**—Provisions for increased user taxes were passed without changes in rates originally proposed by Rep. Hale Boggs. The bill also keeps the Boggs scheme for earmarking other gas and tire revenue on the basis of existing rates.

The approved bill—as it now stands—would boost the federal tax on gasoline, diesel fuel and special motor fuels from 2 cents to 3 cents a gallon. The tax on all kinds of tires used by highway vehicles would go up from 5 cents to 8 cents a pound. A new tax of 3 cents a pound would be levied on camelback or tread rubber used by highway vehicles. The existing excise tax on new trucks, buses and trailers would be raised to 10%.

There were, however, five revisions tacked onto the tax bill.

One major change provides that the higher, or new, taxes would apply for 16 years beginning next July 1, to raise an estimated $13.5 billion in additional revenue. As originally proposed by Boggs, this part of the financing plan would have to run for 15 years in order to bring in an estimated $12.2 billion.

Existing tire and gas revenue is being counted on to provide an estimated $22 billion during the next 16 years. This—on top of the anticipated $13.5 billion in new revenue—is expected to pay practically all of the federal government's $36.5-billion share of the proposed $51.2-billion highway program.

A second important revision calls for setting aside a trust fund for highway financing. All new revenue from gas, diesel fuel and special motor fuels—as well as present tax money from that source—would be put into the trust beginning July 1, 1956. Revenues from the existing tax on tires and tubes would be added to the fund starting July 1, 1957.

• **New fiscal policy**—This second revision introduces two departures in federal finance. The first new principle is that of the earmarked tax, whereby all highway user taxes would be reserved for spending on roads. At present, the federal budget system contains only a few minor earmarked taxes. The other change in finance policy involves the trust fund, whereby highway receipts and spending would be taken right out of the budget. Trust funds are now used mainly for insurance-type accounts.

These are the other amendments to the tax bill:

• The Bureau of Public Roads and the Interstate Commerce Commission will make a study to determine the effect of heavy vehicles on highway construction cost. The Boggs Bill applies tax rate increases equally to all motor vehicles. But the study amendment leaves the door open for later tax revisions if it is found that trucks are not paying their share of costs. The federal report is to be submitted by March 1, 1959, with interim reports due on March 1, 1957, and March 1, 1958. After the study is completed, highway-user tax rates will be re-examined for any necessary adjustments.

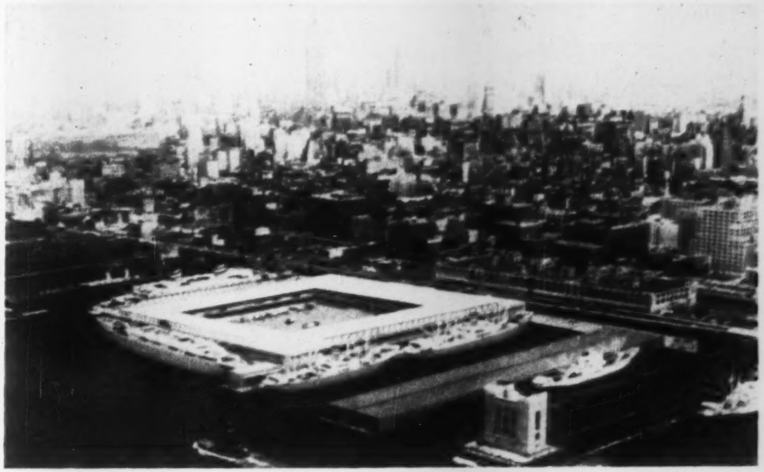
• Tread rubber or "camelback" will be exempt from taxation when used for non-highway vehicles.

• The question of exempting city buses from the gasoline tax will continue to be studied by the committee with a view toward exempting all city bus transportation not covered by the present bill. The bill now frees non-highway users from the boosted taxes—farmers and construction machines.

• **Hearing highlights**—Revisions in the tax bill were worked out as a result of testimony taken during a week of open hearings and two days of executive sessions.

One challenge to the bill came from Secretary of the Treasury George M. Humphrey, who testified that the Democratic-sponsored tax formula would fall $11.9 billion short of bringing in needed new revenue. However, he arrived at this figure by calculating on a 12-year basis of spending and building. Later—using figures for the 16-year tax plan—he contended the deficit would total about $2.5 billion.

Another disputed question was whether heavy trucks should pay higher taxes. American Trucking Associations, Inc., gave its support to the across-the-board increases in highway user taxes.



Plan Square Pier for N.Y. Waterfront

The stage has been set for construction by the City of New York of a novel, square-shaped, $16-million Hudson River pier. The 810 x 815-ft structure, with a 55 x 185-ft extension on its southern side, will accommodate four ocean-going vessels simultaneously.

In addition to space for ships, the pier will provide parking space on its three-story roof for 1,000 automobiles and a 250,000-sq ft central court will make for easy truck maneuvering.

The city's Department of Marine & Aviation expects to let contracts for preliminary borings late in March, according to Lewis H. Rabbage, chief engineer. Consulting engineers to the department are Roberts & Schaeffer, of New York.

California Water

Feather River money, state department to be proposed

California's Gov. Goodwin J. Knight announced he will ask the state legislature to consider creating a State Department of Water Resources at a special session to convene concurrently with the regular budget session on March 5. He will also recommend, at the latter session, that funds be appropriated for start on the Feather River Project—the giant $1.6-billion development that will store water in northern California for use in the southern part of the state (ENR Mar. 10, 1955, p. 21).

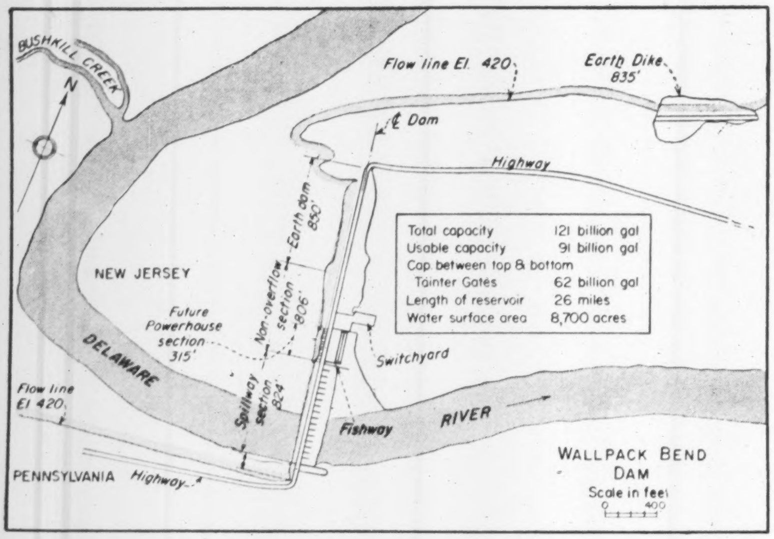
The idea of a state water department has been under consideration for many years in California. Most recently, Bechtel Corp., in a feasibility study of Feather River, strongly recommended establishemnt of a unified state agency with jurisdiction over all water matters (ENR Jan. 19, p. 26).

Water administration is now divided among many state agencies. A typical example of the present discord was displayed recently when the State Water Pollution Control Board claimed that the State Water Resources Board encroached on its regulatory powers by asking it to approve water quality standards formulated by the latter in connection with preparation of the California Water Plan.

Most observers believe that an overall Department of Water Resources will very likely be created at the special legislative session.

Gov. Knight backed up recommendations made by the Water Resources Board last month (ENR Feb. 16, p. 44) when he announced he will ask the legislature for about $28 million for the preparation of final plans and specifications for Oroville Dam, for a start on relocation of highways and railroads necessary before dam construction can begin, and for purchase of the site for San Luis Dam and Reservoir.

The state's chief executive also favors federal construction and state operation of San Luis, as recommended by the Bureau of Reclamation despite opposition by strong local interests. Legislative trouble is forecast on this point, but there is agreement on the governor's stand to finance Feather River through issuance of general obligation bonds. This method was recommended in the original Feather River report by now-retired State Engineer A. D. Edmonston and was concurred with by the Bechtel Corp. in its recent review of those plans.



Total capacity	121 billion gal
Usable capacity	91 billion gal
Cap. between top & bottom Tainter Gates	62 billion gal
Length of reservoir	26 miles
Water surface area	8,700 acres

Delaware River Dam Plans Set

Completion of engineering studies on Wallpack Bend site advances financing phase—bi-state compact to be made

State and federal planning for the much-discussed Wallpack Bend Dam and Reservoir on the Delaware River took definite shape with the recent release of a detailed engineering report on the project. The report—prepared by Albright & Friel, Inc., of Philadelphia—sets forth a comprehensive analysis of the proposed dam's effect on stream flow and flood control, the latter taking into account the hurricane-caused floods of last August, in addition to up-to-date cost estimates.

The Wallpack Bend site, 26 mi downstream from Port Jervis, N. Y., has long been eyed as a water supply source and recreational center for southeastern Pennsylvania and the metropolitan areas of northern New Jersey by the respective states, by the Interstate Commission on the Delaware River Basin, and by the Corps of Engineers. In March 1955 the current financing attempt unfolded as the Pennsylvania General Assembly concurred with the State of New Jersey in a joint approach: Pennsylvania would construct the project with New Jersey later reimbursing the Keystone State for up to 30% of the cost in return for a like amount of the benefits.

• Flurry of action—Pennsylvania's Department of Forests and Waters engaged the consultants last May. Then the August floods brought forth the possibility of federal participation. In December New Jersey expressed an interest in sharing 50-50 in the project, including joint construction. And in January of this year the Corps of Engineers held open hearings to explore the extent of federal interest in developing the Delaware, particularly in the flood-control aspect.

The engineering report, becoming available at this time, puts the picture into clear focus. Total cost of the dam, reservoir and small powerhouse is estimated at $69 million. Cost of recreational facilities on the Pennsylvania side will come to $1.4 million; no estimate is available for any such facilities in New Jersey since the report was for Pennsylvania.

As indicated on the accompanying drawing, the dam would consist of a concrete gravity section 1,850 ft long and 170 ft above bedrock plus an earth section 850 ft long. Seventeen tainter gates, each 25 ft high by 40 ft wide, would control release of water; 11,000 acres of land would be required for the reservoir.

• Water supply aspects—Primary objective of the project is water supply. Water would be obtained by three methods: diverted directly from the reservoir; diverted downstream, and pumped from downstream intakes by various users. The consultant's report states that the reservoir's storage capacity appears to be sufficient to allow release of 520 mgd for a period of 180 days, longer than past low-flow periods on the Delaware River.

Actual flow of water in the Delaware during the lowest flow period on record—October 1930—would have been increased by 60% had Wallpack Bend Reservoir been in existence. Considering only the two New York City reservoirs presently in operation together with the proposed Wallpack, a minimum flow in the Delaware River of about 2100 mgd can be maintained at Trenton, N. J. where, in the past, flows as low as 800 mgd have been recorded.

Improvement of stream flow during natural low flow periods is paramount. During the months of August through November in many years, flows in the Delaware, even as increased by New York City releases, are not considered adequate for the river to be utilized as a source of domestic or industrial water supply nor for disposal of treated wastes.

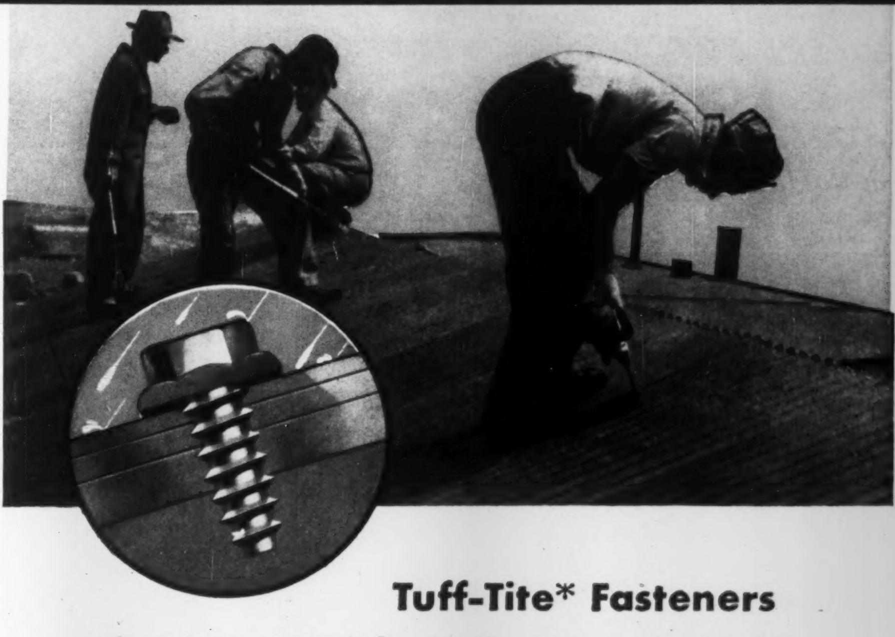
• Important for flood control—The flood-control value of Wallpack Reservoir was verified by an analysis of last August's flows, based on preliminary flood flow information. Had water level in the reservoirs been at the bottom of the tainter gates (El. 396), peak flow below the dam of 232,000 cfs would have been reduced to 181,500 cfs, or a reduction in river flood stage level of about 5 ft.

If reservoir water level had been at El. 407—actual condition on the day of the storm—had the dam existed, peak flow would have been reduced to 194,000 cfs or a drop in the flood stage level of 4 ft. Dollar value of flood damage that would have been prevented is difficult to ascertain at this date.

Recreational value of the reservoir—located in the scenic Kittatinny Mountains—is another important aspect of the project. Four areas totalling 3,580 acres are to be provided on the Pennsylvania side for bathing, boating and fishing. New Jersey will probably match this on its side of the reservoir.

• Power secondary—Power generation is a secondary purpose of the project. Maximum utilization of the Delaware River flow requires a 22,200-kw plant at a cost of $3.8 million (included in $69-million initial cost estimate). Considering a projected New York City diversion of 800 mgd upon completion of Stage 3 at Cannonsville, firm power production would be 6,350 kw.

After thoroughly digesting these salient features of the Wallpack Bend project, Pennsylvania and New Jersey administrators and lawmakers are speeding efforts to work out a suitable compact. In addition, Pennsylvania requested the Corps of Engineers to make a special report of its findings on Wallpack before completion of its basin-wide study of the Delaware River (ENR, Jan 12, p. 27).



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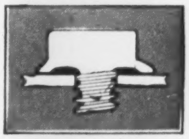

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Headquarters for California Department of Employment, two blocks long, bridges a street

State Saves $3 Million on Office Building

The California legislature, a few years ago, appropriated $10,450,000 for a central office building for the state's Department of Employment in Sacramento. But when employees moved in at the beginning of this year, the state got back more than $3 million. Construction costs had averaged only $12.40 per sq ft, instead of the nearly $20 estimated.

Credit careful design by the Division of Architecture of the state's Department of Public Works, which designed the 7-story structure—largest state-owned office building in California. Here's how the division saved money:

- Simplicity of design.
- Repetition of size and kind of materials.
- Frequent use of manufacturers' stock materials.
- Close coordination of planning by division's technical sections.
- Elimination of a basement.
- Concentration of utility areas.
- Cutting fire protection of structural framing to a minimum.

The new building, with a total floor area of nearly 500,000 sq ft, will house over 3,500 employees engaged mostly in tabulating, accounting, record keeping and administrative functions. Completely air conditioned, it contains electronic accounting machines (not included in the original appropriation), which require rigid control of air temperatures and humidity.

• **Straddling a street**—Extending over two blocks, the building is 683 ft long and 274 ft at its widest. Expansion joints separate it into four sections, each with an independent structural system. The structure has a steel frame supported on piles.

Where the building bridges a city street, the outer walls are supported on 6½-ft-deep plate girders spanning 73 ft. The girders in each wall are tied together with struts capable of carrying either compression or tension.

Between the exterior walls, the third, fourth and fifth floors are suspended from two steel Pratt trusses, two stories (26 ft 8 in.) deep. Top chords are at roof level, lower chords at the sixth floor. This arrangement was employed to allow greater circulation and utilization of space on the lower areas. Plate girders and trusses are X-braced with steel rods in a horizontal plane at each floor.

• **Two Structural Systems**—The 3,200-ton steel frame of the building has riveted shop connections and high-tensile bolt field connections, generally without washers. Column spacing is 27x18 ft. Beams span 27 ft between girders at about 9-ft intervals.

The frame was designed to carry vertical loads only. Exterior and interior concrete walls, acting with the concrete floors as horizontal diaphragms, will resist wind and seismic forces.

Exterior walls are exposed concrete, formed with plywood. Finish consists of two coats of paint. Windows have steel sash—partly fixed, partly casement, swinging out.

Floors consist of cellular steel decking topped with 2½ in. of lightweight concrete fill. This design reduced steel requirements, lightened foundation loads and served as conduit for power and communication wiring. Floors were designed for a live load of 100 psf, rather than 50 psf normally required for office buildings, because of the weight of tabulating machines and filing cabinets used by the Department of Employment. Finishes included asphalt tile in office areas, with vinyl tile in some places and terrazzo in lobbies.

• **Other cost-cutting ideas**—Concentration of utility areas was a big factor in achieving economy. All toilet rooms, fan rooms, electric panel boards, telephone facilities, etc., are placed in the same relative location on each floor. Electric services originate at a transformer room located in the center of the building. High voltage (277/408-v, 3-phase) is used for power distribution, effecting savings in wiring estimated at more than 25% of that for conventional systems.

Gas-fired boilers are located at one corner of the building at ground level. Refrigeration equipment for air conditioning is placed on the floor directly above. Fan rooms are spaced along one wall on each floor, air being taken

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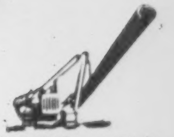
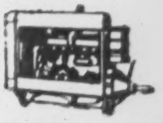
"MORLIFE clutches last 950 hours longer, without adjustment."

"MORLIFE clutch needs adjustment once a month, instead of daily."

"MORLIFE requires lighter handle pull and one tenth the adjustments."



"MORLIFE requires lighter handle pull and one tenth the adjustments." "MORLIFE pulls harder and lasts six to ten times longer."



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CRESCENT SCRAPER ON BOOM MACHINE: *best* for increasing the work capacity of any boom machine on backfilling and grading jobs. When scraper is used with track cable and trolley, machine range is greatly extended.

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Slackline cableway performs difficult excavation of non-caving material from deep pit. 70% rock and 30% colloidal sand posed tough digging job. Ask for Catalog C and Field Report 216.

Tautline Cableway spans 920 ft. to carry 4-cu. yd. bucket of concrete from mixing point to dam site.

Crescent on boom machine dumps large load of wet peat. Bucket is gravity-returned on track cable to digging point. Ask for Catalog J-1 and Field Report 228.

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in through louvers and exhausted through penthouse stacks. Distribution of air for heating and cooling is accomplished through use of a double-duct system.

Also contributing materially to savings, fire protection of structural framing was kept to the minimum consistent with safety. The soffits of all steel decks and beams are protected by a continuous ceiling of vermiculite plaster (rated at two hours). The duct space below this ceiling is protected with gypsum board, to which acoustic tile is nailed. Partitions, consisting of nailable steel studs surfaced with gypsum boards on both sides, have a one-hour fire rating.

The building is equipped with six passenger elevators, three freight elevators, a bank of electric stairs, mail conveyor and automatic vertical-lift conveyor.

Anson Boyd is California state architect and chief of the Division of Architecture, and Charles M. Herd is chief construction engineer. The central office building for the Department of Employment was designed under the supervision of Alfred Eichler. Construction was carried out under separate contracts, the principal contractors being George A. Fuller Co., general; Bethlehem Pacific Coast Steel Corp., structural steel; Collins Electrical Co., electrical; M. R. Carpenter, heating and ventilating; and Westinghouse Electric Corp., elevators.

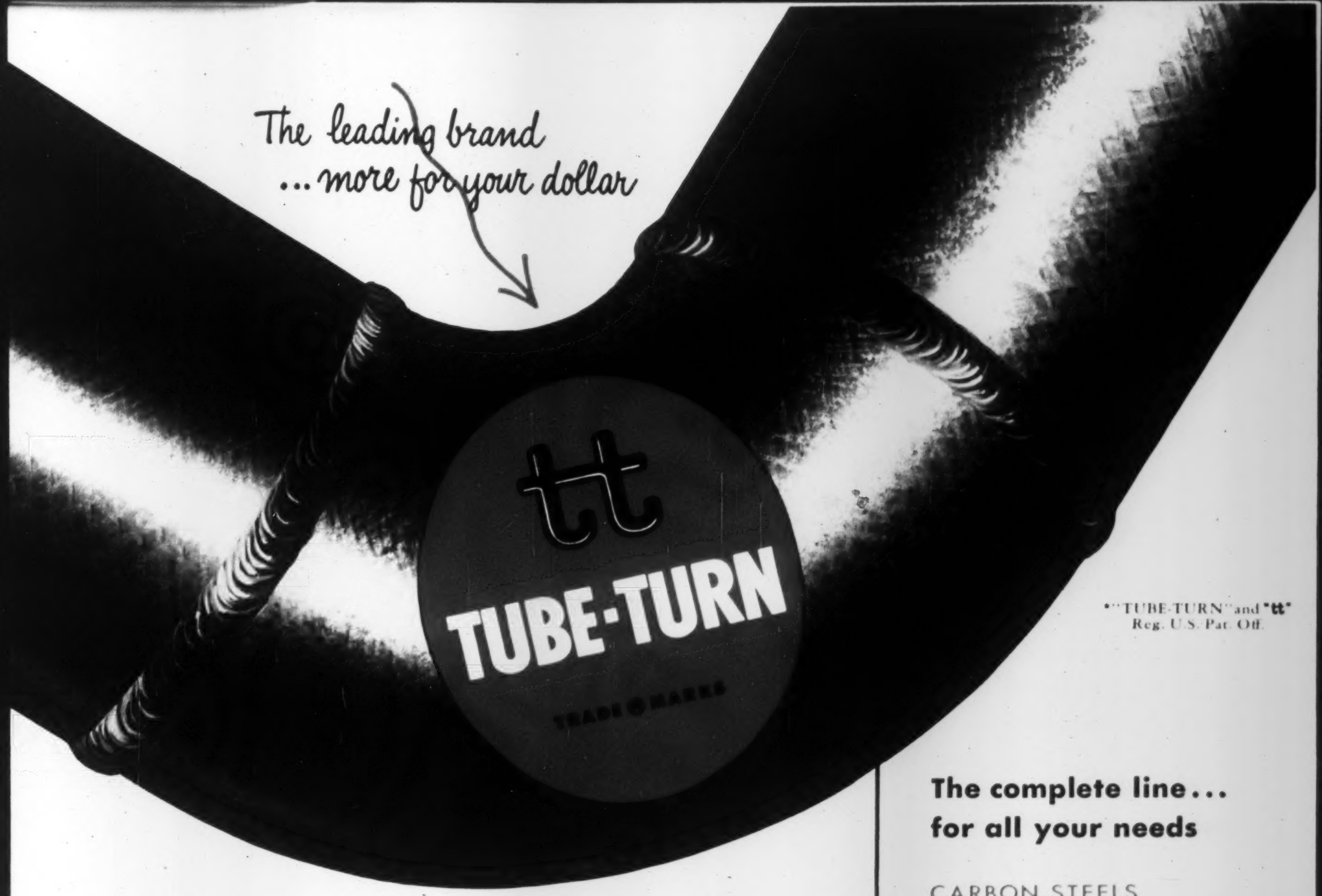
$25,000 Asked to Study How Rainfall Runoff Can Be Upped

Although Arizona's average rainfall has varied little in the first 55 years of the century, the water yield has dropped tremendously—especially in the Salt River Project watershed. R. J. McMullin, project president, has asked that the state allot $25,000 to aid the University of Arizona in a study of methods of increasing runoff from rainfall.

George Barr of the University said he is working on a project to determine feasibility of a program to remove brush, cedars, or young pine trees from state land in order to increase runoff.

McMullin noted that average yearly rainfall of 21.77 in. produced 15,440,000 acre-ft of water in the 10-year period 1900-09. During 1940-49 a 20.28 in. produced 10,693,000 acre ft. And 20.43 in. from 1950-54 produced only 4,100,000 acre ft, or a projected 8,200,000 acre-ft for the decade.

McMullin believes the water yield decline is caused by intrusion of noxious plants. An area of about 2,000,000 acres of the watershed has become covered with them during the past 35 years.



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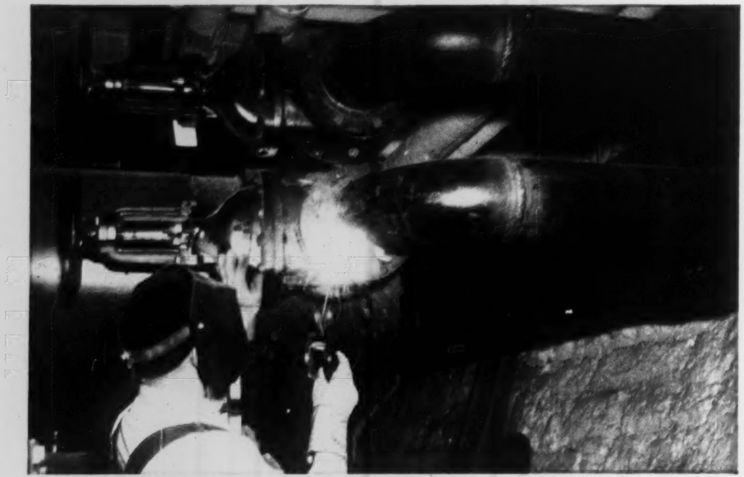

Air Conditioning piping ... wrought iron and TUBE-TURN* Welding Fittings are used for condenser water lines shown here, part of new air conditioning installation at State Capitol Building, Harrisburg, Pennsylvania. Contractors: Riggs Distler & Co., Inc.

Down Spouts on Abbey Avenue Bridge, Cleveland. Made of 10" wrought iron pipe, with 45° TUBE-TURN Wrought Iron Elbows. Contractor: Gorman-Lavelle Co., Cleveland.

Hospital piping ... wrought iron 5" cold water, 2½" high-pressure condensate returns and 4" pump discharge ... at City Hospital, Cleveland. TUBE-TURN Wrought Iron Fittings used throughout.

Radiant Heating. Many engineers prefer wrought iron piping for these systems (and snow-removal systems). Shown here: welding in bank of coils to hot water line with TUBE-TURN Welding Tee at Capitol Annex Building, Frankfort, Kentucky. Contractor: B. A. Walterman Co., Cincinnati.

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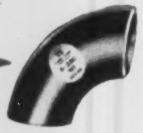
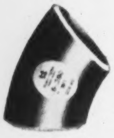
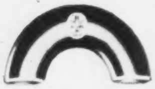


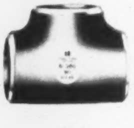
90° ELBOWS



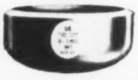
45° ELBOWS



180° RETURNS



TEES



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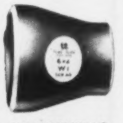

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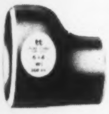
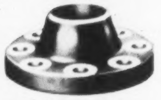


ECCENTRIC REDUCERS



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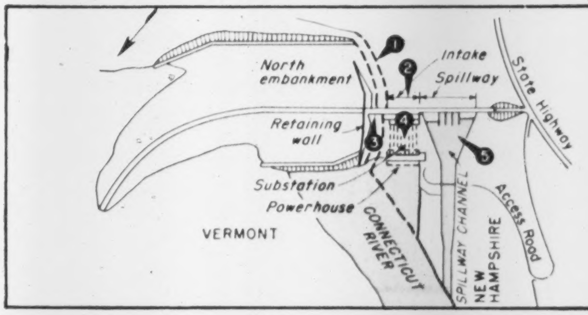
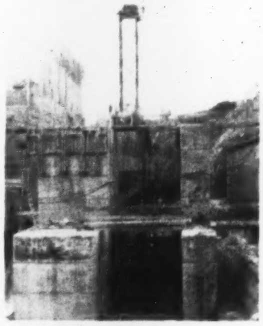
1–Rolled embankment is 2040 ft long

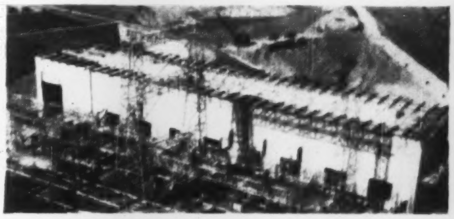
2–Intake will handle 12,000 cfs

150,000-kw Littleton Project features unusual powerhouse, air-cooled generators, early diversion





3–Smooth closure



4–Powerhouse has low level control room

5–120,000 cfs spillway

New England Gets Large Hydro

The largest hydro development to be completed in New England in 25 years will put the first of four generators totaling 150,000 kw on the line this spring. Located about 80 miles from the Canadian border on the Connecticut River bounding New Hampshire and Vermont, this $45 million Littleton project, of the New England Electric System, shares with its sister Comerford development, just downstream, the distinction of being the largest water power station in New England.

Littleton reflects the character of the people who designed and built it. Typical New Englander thoroughness and money-saving ingenuity with a dash of calculated risk taking tell the story. Unusual features include a low level control room in the powerhouse use of air-cooled generators, bold early river diversion, and passage of pond water during construction through the penstocks.

The site, acquired in the late 1920's by New England Electric System, has been developed primarily to serve peak loads in the company's extensive steam and water power electric generating system. Base load operation is expected only during freshet conditions on the river.

Founded on partially cleaved schist bedrock, the strung-out dam contains a rolled earth section starting on the Vermont side 2,040 ft long and 180 ft high, retained by a massive 120-ft high wall on ledge above the New Hampshire bank. Beyond this, in line, are a concrete non-overflow section 115 ft long in which final closure was made, an intake structure 255 ft long, and a 373-ft spillway section containing skimmer gate, two bays of stanchion flashboards, three tainter gates and another two bays of flashboards. Finally there is a concrete non-overflow section 120 ft long tying into a 350-ft earth section. Overall, the dam measures 3,150 ft along its axis.

• Novel indoor powerhouse—Four welded steel penstocks, 16½ ft in dia at the scroll cases, will conduct water 300 ft at an average 149-ft head to four turbines housed in an unusual power house. Company engineers studied the relative merits of outdoor, semi-outdoor and indoor powerhouses and came up with a basic indoor design, but one that placed control room, offices and station serv-

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ice below generator floor level, thereby reducing superstructure requirements to a minimum.

Utilization of the substructure volume for the control rooms achieved substantial savings over a more conventional indoor powerhouse with control room at generator floor level. Actually, the design was built at a cost about equal to that of the outdoor types, and was preferred because of the shelter it provided.

The main structure is steel frame with brick walls on a concrete substructure, 256 x 52 ft in plan. An additional 25-ft width extends underground on the downstream side and houses the control room (see cross-section). Station service occupies a 20-ft extension upstream beneath the transformer yard. An open area exists at generator floor level beyond the line of generators towards the spillway channel (and station yard) with a shop below that at control room level.

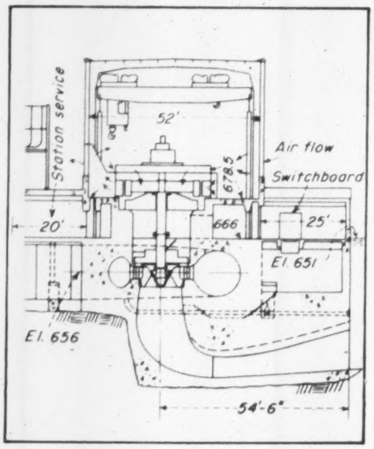
The economy of this design is based on the following factors. Draft tubes and a gallery had to extend beyond the powerhouse superstructure regardless, and these of course required foundations. In view of tailwater elevation the downstream wall would have been carried up above El 666. Thus, the control room was added on top at relatively little cost. The same principle of utilizing foundations, which had to be there anyway, made the upstream extension economical.

Turbines are single runner Francis type equipped with Woodward Twin-cabinet actuator-type governors. The turbines drive four umbrella-type vertical generators, each rated at 39,000 kva and having its own direct-connected exciter and pilot exciter.

• Air-cooled generators—Although the great majority of modern generators are water cooled, the New England utility could find no economy in their use and so chose air cooling it had in its other plants. One advantage of this type generator is that it can provide building heat during cold weather. Outside air is drawn into the powerhouse through louvers in the downstream and one end wall, then into individual generators each requiring 80,000 cfm, by fans mounted on the generator rotor. Washable air filters are mounted on each generator.

Air passes over the rotor and stator coils and is then discharged through the stator frame sides into an air duct (to eliminate any possibility of short-circuiting air circulation). Air is ducted either outside via the upstream wall or into the powerhouse for heating purposes.

Two 75-ton traveling electric cranes, each with 15-ton auxiliary hoists, serve the generator room floor and adjacent area. The cranes can be coupled together.



CONTROL ROOM below indoor generators proved most economical design.

Each generator is connected in a unit system with its own step-up transformer bank, hiking generated 13.4 kv to 230 kv. Transmission lines using expanded aluminum conductors run 6.7 miles to the Comerford station downstream and connect to the existing network there. Crossing the spillway channel in the first few hundred feet presented a special problem because turbulence of the water during spillway discharge in cold weather could cause excessive ice formation on the overhanging wires. So embodied in the wires is an insulated heating element that can take all the line current for short periods to melt or prevent ice formation.

• Early river diversion—Construction began late in 1953 with excavation of the diversion channel. River flow was turned in December of that year. Diversion at this time before the spring runoff was a gamble to gain several weeks construction time in preparing earthdam foundations. Rockfill cofferdams were built high enough to take a runoff that had been exceeded in only 25% of the years on record. But the bet was lost when in April, 1954 the river reached its fourth largest flow of record and breached the cofferdam. Early diversion nevertheless saved the constructors time since the site was unwatered as soon as it would have been had diversion been delayed until spring runoff had ended.

Construction on both earth and concrete portions of the dam went into high gear in May, 1954. The Vermont side of the embankment is founded on good impervious boulder clay extending downward to ledge rock while the New Hampshire side

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of the stream provides good ledge outcrop. Unfortunately, the two locations didn't line up, forcing a curve in the dam.

A large fleet of earthmoving equipment placed up to 32,000 cu yd a day of boulder clay in the cutoff trench and core, and sandy till and pervious sand and gravel in the main body. The seamy character of the ledge in some areas made necessary drilling and filling of 35,000 lin ft of grout holes.

The retaining wall supporting the embankment is of gravity section and extends 776 ft perpendicular to the dam axis. This length and its magnitude, 55,000 cu yd of concrete, compared to a total of 220,000 cu yd required for the entire project dictated selection of the crawler crane method of concrete placement over use of cableways. Cranes equipped with 140-ft aluminum booms reached out 100 ft with a 4-yd bucket, and were used for concreting on the dam itself. A stiffleg derrick with 185-ft boom handled concrete buckets for the powerhouse, penstock cradles and dam closure pores. Type II portland cement was used in producing concrete strengths specified at 2800 psi for mass structures and up to 3500 psi for thin sections and structural work.

• **Model studies aid**—Extensive model studies conducted by the Alden Hydraulic Laboratory at Worcester Polytechnic Institute aided in the design of intake and spillway sections and also dictated construction in the spillway channel. Where it re-enters the river, ledge underneath the spillway channel drops off sharply. Excavation to ledge or construction of a stilling pool would have been very expensive. The model studies indicated little tendency for eroded materials to build up in front of the tailrace, so only a pilot channel for the spillway discharge has been excavated. Nature is expected to do the rest over the years.

Final closure began in July, 1955 in the section between retaining wall and intake. Two piers that had earlier been formed in the diversion channel were raised, and the three gaps were alternately filled with concrete. Water was passed continuously to meet downstream requirements.

To prevent erosion of the ledge in the diversion channel, energy of discharging water was dissipated within the closure sections by introducing several 90-deg. turns in a 10x10-ft sluice passageway built in one of the original piers. Water entering this sluice opening was turned at right angles toward a vertical shaft, thence downward and again at right angles to another opening left between the two piers. Model studies proved a substantial reduction in exit velocity.

• **Penstocks as outlets**—When pond elevation reached the penstock sills, water for downstream requirements was passed through one of the penstocks while turbine erection proceeded on the other units. The 10x10-ft sluice was then concreted. Passage of water through the penstock continued until pond elevation reached the tainter gates at which time more normal spillway discharge was begun.

Under normal operating conditions the pond formed by the dam will be at El 809. The reservoir will contain 115,000 acre-ft of usable storage over a 3500-acre area and allow a maximum drawdown of 40 ft. The embankment and non-overflow concrete sections of the dam are at El 820; gate sills of the gravity intake structure are at El 725; skinner gate crest is at El 789; flashboard bays crest at El 792; tainter gate sections crest at El 779.

Nominal power generation at full pond will require 12,000 cfs of water. The spillways can discharge 120,000 cfs, compared to a maximum recorded stream flow of 50,000 cfs.

• **Who's who**—Littleton Project is being built for the New England Power Co., subsidiary of New England Electric System. All design, except the powerhouse superstructure, was performed by the New England Power Service Co., the parent utility's service organization. Chas. T. Main, Inc., Boston, turned out plans for the generating building, and was also retained as consulting engineer. Ebasco Services, Inc. functioned as construction manager, with Jack McKamey and Roger O'Reilly in charge.

The Thompson & Lichtner Co. served as concrete consultant, Prof. D. W. Taylor of MIT as soils consultant. Geological investigations were made by Irving B. Crosby. Prof. L. J. Hooper of Worcester Polytechnic Institute supervised model testing at the Alden Laboratory.

B. Perini & Sons, Framingham, Mass., contracted excavation and the earth embankment. Concrete work and installation of mechanical equipment was handled by Morrison-Knudsen Co. The owning utility is installing all electrical equipment except the generators which are being erected by Westinghouse.

Other contractors employed on the job include H. B. Cummings, Woodsville, N. H., on superstructure erection; Walsh-Holyoke Div. of Continental Copper & Steel Industries, Inc., Holyoke, Mass., on penstock fabrication; and Joy Mfg. Co., Michigan City, Ind., for diamond drilling.

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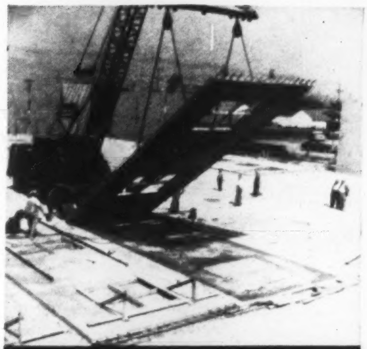
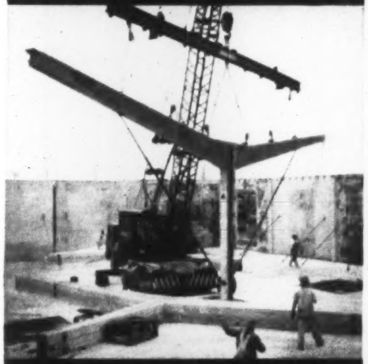
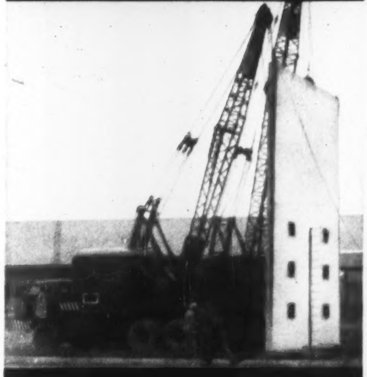


PRECAST PANEL 32′ high, 18½′ wide with two large window areas.



TRUSS has 60′ span at top



114,000 LB. SLAB being positioned

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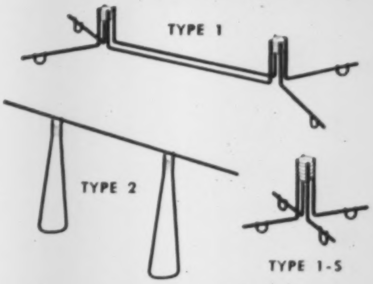
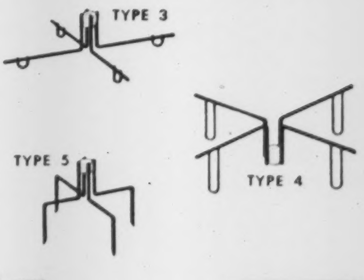
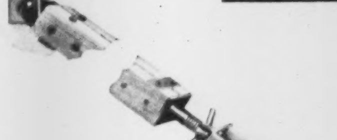


ANCHORS for BRACES



BRACES



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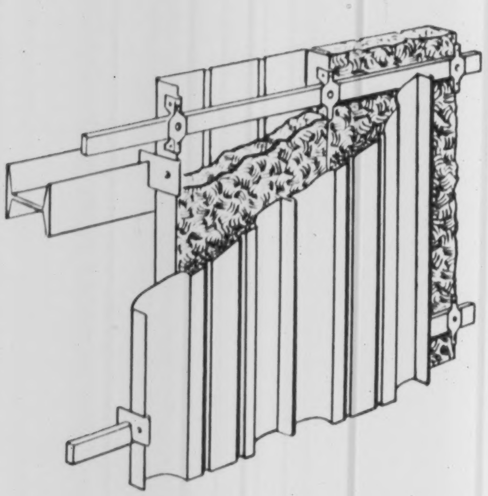
Stran-Steel curtain wall panel offers these advantages . . .



Light framework—Because of the light weight per square foot, steel framework can also be lighter in weight—a significant cost-cutting factor.

Fast, easy to assemble—Panels are tailored to fit individual design. Sections of 18-gauge steel (or lighter), available in lengths up to 52 ft., can be assembled entirely without screws, bolts or welding. Thus a building can be enclosed as soon as framework is erected . . . and interior finishing and equipment installation can begin before exterior is complete.

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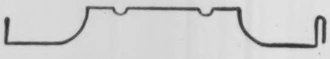
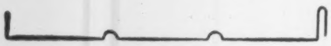
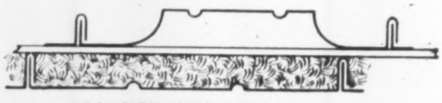


EXTERIOR SHEET



INTERIOR SHEET



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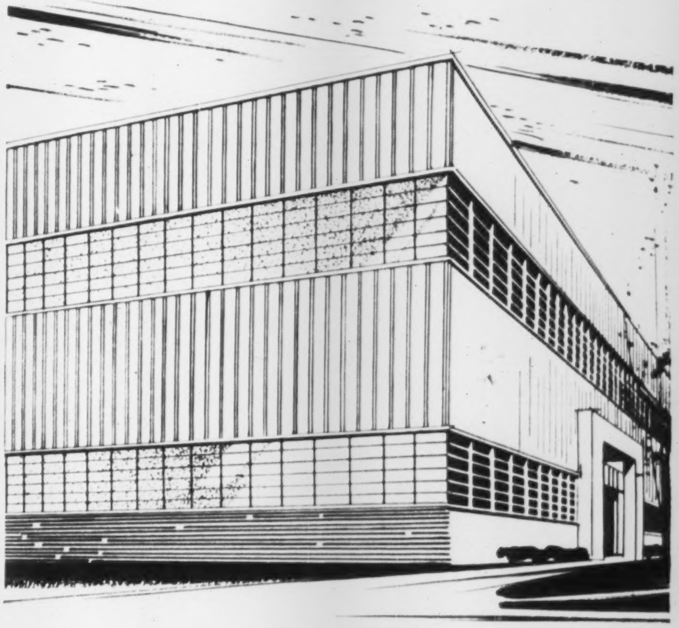

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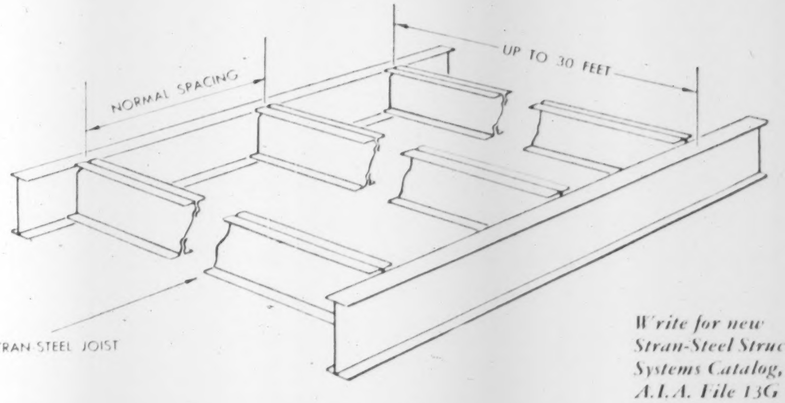

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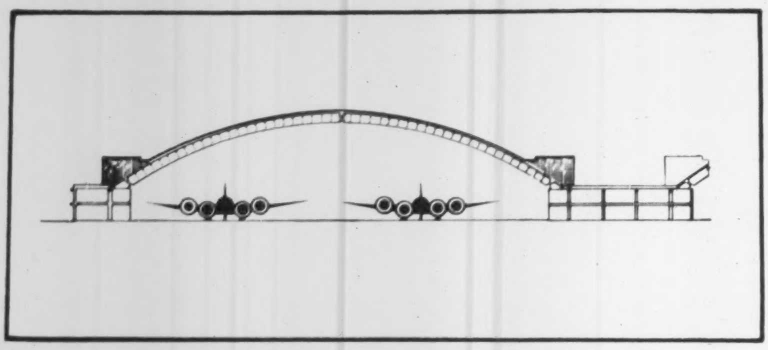
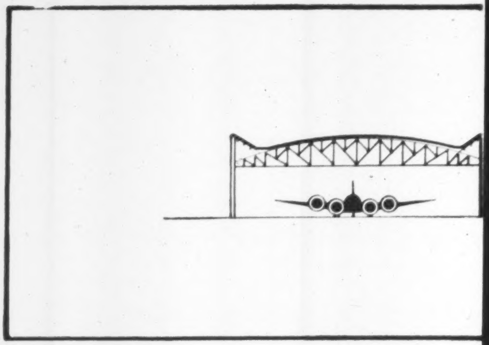
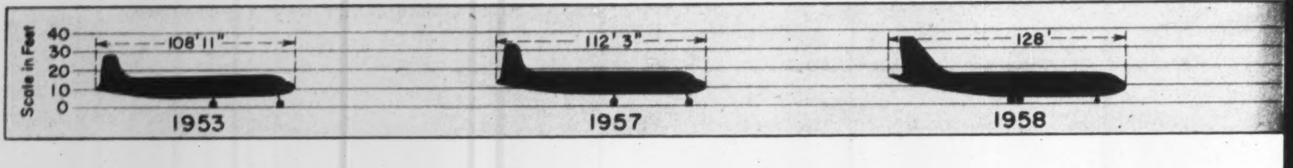


1950 marked the completion of this continuous three-barrel arched-roof hangar. Three-hinged steel arches provide main support. (PNYA's Hangars 3, 4 and 5.)



1954 PNYA Hangar 6 has its six-barreled roof supported by steel bowstring



At New York International Airport . . .

Hangar Design Races To Keep Up With

Out of the whirlwind evolution of U. S. aircraft are coming flying machines of all sizes and types, and the most conservative aircraft designers predict even more widely varied sizes and shapes to come.

These predictions indicate continuing headaches for the engineers who must design hangars now to house the planes of tomorrow.

The Port of New York Authority, for one, has been wrestling with this problem at its New York International Airport. This airport is the hub of international air travel for the eastern U. S. While its facilities are leased to various flying concerns, most are designed and built by PNYA.

Since taking control of the airport in 1948, Port Authority engineers have turned out seven hangars representing four radically different types; designed the counterpart of one in prestressed concrete for cost study; and are now toying with a unique cantilever design for the future, appropriately named the "gull wing" type.

On top of this, two more hangars of a sensationally different style will soon be built—one for Pan American World Airways, the other for Trans World Airlines. These two hangars were designed by Ammann & Whitney, a New York City engineering firm, with assistance of local architects.

In the evolution of hangar design, PNYA engineers have learned many lessons. This is apparent in what has been done so far at Idlewild:

Hangars 3, 4 and 5 were completed in August, 1950, at a cost of $5,915,000, and actually form one continuous, three-barrel arched-roof building. The hangar is of the conventional arch-type design, and has the limitation always imposed by that type structure in that the number of aircraft placed side by side is very restricted. Here, each hangar section has for its main roof support a series of six 3-hinged steel arches that provide a clear lateral hangar span of 300 ft. The foundations for the steel framed hangars are concrete footings topped by pedestals. The three "barrels" are connected by two-story office and shop sections of standard steel frame and masonry construction. Height of the 3-hinged arches in the center is 75 ft.

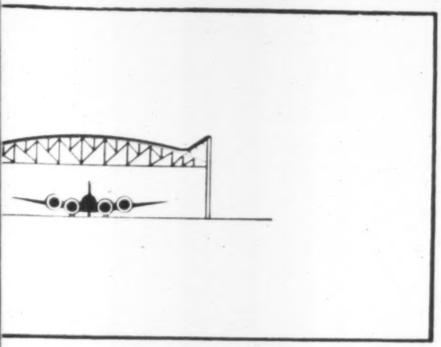
Hangar 6 was completed in July, 1954 at a cost of $2,187,000. In contrast to the steel 3-hinged arch of its predecessor, its primary structural components are six 140-ft steel bowstring trusses placed side by side. In place of intermediate walls to support these trusses, there are five king trusses running from the front to the rear of the hangar.

Along the back side of the hangar there is an office and shop annex that extends its full (842-ft) length. The walls of this annex plus the end walls and rear of the hangar are constructed of marble-faced block. The structure is supported by concrete foundations resting on wood piles.

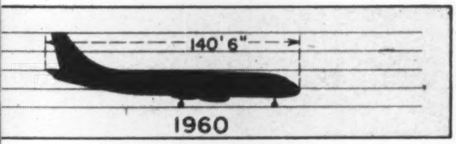
Hangar 7 was finished in November, 1954 at a cost of $2,101,000. A two-story shop and office center section framed in steel, 100 ft wide and 403 ft long, provides the support for an unusual exposed cantilever system from which extend 133-ft trusses to give an unobstructed area the length of the building. The building is asymetrical with the bay on one side running a length of 283 ft and that on the other the full length of the building of 403 ft. Clearance at the hangar doors is 32 ft. The exterior walls are masonry up to the height of the trusses. Above this the building is enclosed by corrugated metal siding. The structure rests on timber piles supporting concrete foundations.

Hangar 8 was completed in July, 1955 at a cost of $4,090,000, and in structural principle is similar to Hangar 7, with the exception that the cantilever design has been modified to eliminate exposing the trusswork. Hangar areas are provided on each side of the two-story center section, which is 100 ft wide and 433 ft long. The steel trusses cantilever 133 ft, and their clearance at the hangar doors is 32 ft. The exterior walls are masonry (concrete block or brick).

Hangar 9 was completed in December, 1955 at a cost of $2,953,000.



trusses of 140-ft span. These are held up by king trusses at right angles.



he Planes

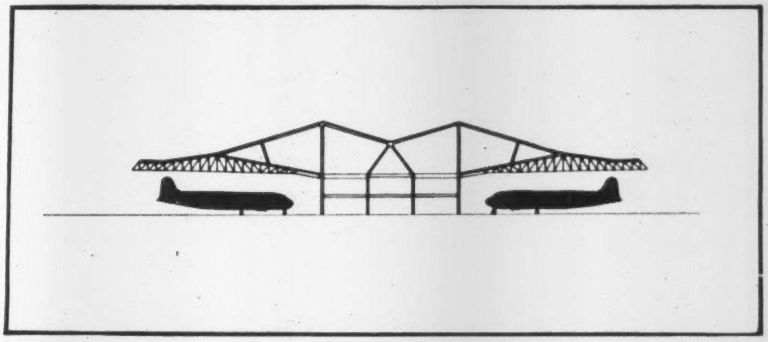
It differs from Hangar 8 principally in that it is slightly smaller in size. The two story center section is only 80 ft wide and the trusses extend 133 ft. Length of the building is 462 ft. Hangars 8 and 9 rest on concrete foundations, supported by timber piles.

If correction is made for the rising cost index the relative costs of these structures on a psf basis are as follows:

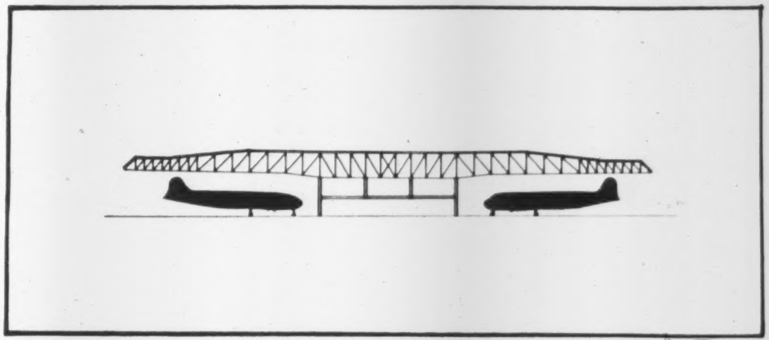
A. Conventional 3-barrel
    steel arch hangar. . . . .Base Price
B. 6-Barrel Steel
    Bowstring Truss. . . .63% of base
C. Suspended cantilever
    with exposed steel. .52% of base
D. Double cantilever with
    roof above the steel
Minimum construction. .57% of base
Plush construction. . . . . .68% of base
E. Counterpart of D. in
    prestressed concrete .73% of base

Contemplated for construction in the near future are two hangars of a still different design. Trans World Airlines and Pan American will build a suspended roof hangar of a type that is presently under construction for TWA at Kansas City, Mo. (ENR, Jan. 26, 1956, p. 44). In plan the hangar is similar to PNYA's cantilever structure, having a two-story center shop and office section, 100 ft wide running the 816-ft length of the hangar proper. On each side of this are the hangar bays, 816 x 150 ft.

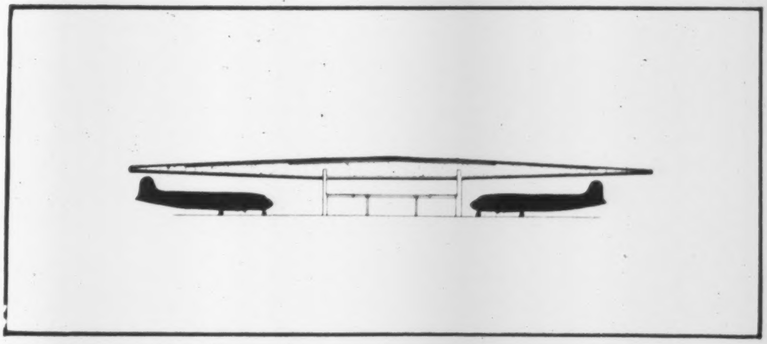
Here, the similarity ends. Rather



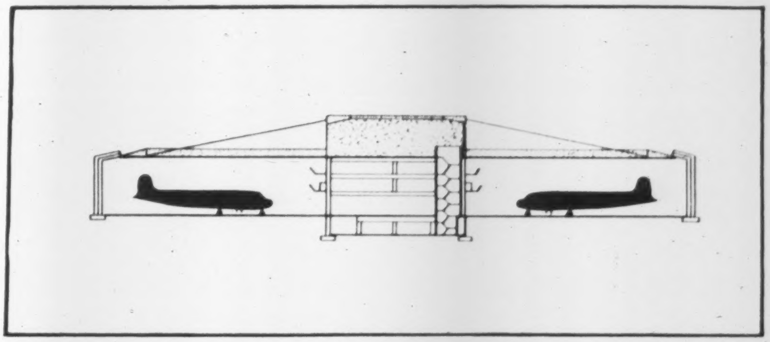
1954 PNYA Hangar 7 relies on a 100-ft wide, two-story center section to provide the support for its exposed cantilever system. Trusses extend 133 ft each side.



1955 PNYA Hangars 8 and 9 also get their support from a 100-ft wide center section. Deep double-cantilever trusses extend 133 ft each side.



Tried this – An alternate design to the one above was in prestressed concrete. Since estimates showed it would cost 8% more, it never got past design stage.



Coming up – Scheduled to be started some time this year, this reinforced concrete design depends on cable suspension of two thin-shell 150-ft concrete roofs.

COMMENT
from the
BUTLER ENGINEER

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National Concrete Masonry and the
National Sand and Gravel conventions.

Wonderful to see our old friends and meet so many new ones. I am however, coining a new name for the festivities — the "meat-loaf-and-bourbon-circuit".
Your Butler Engineer came back from them all with two more pieces of luggage than he took . . . a bag under each eye.

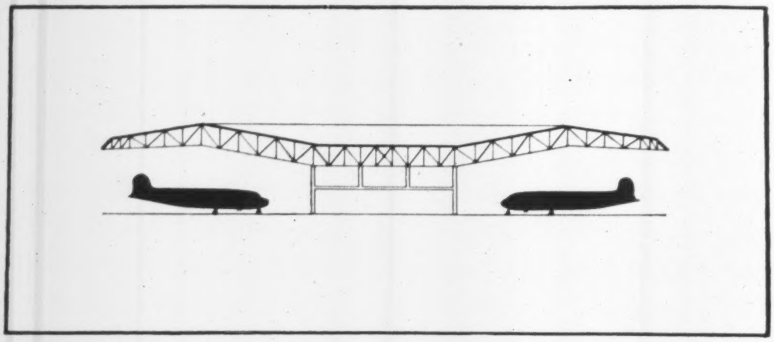
•

Terrifically successful though— every one of 'em. And I'm tickled a rich, rosy pink at the reception given our exhibits. We showed automatic batching equipment — all hooked up and working.
Mighty, mighty interesting what has happened in the concrete batching field. Only a short time ago when we processed orders for batchers it was assumed that unless otherwise marked, they were to be manually controlled. Today it's the other way 'round. Orders are assumed to be for *automatic* batchers unless definitely marked "MANUAL". And these are as scarce as Model T Fords. About four years ago the Butler organization took a good, long look deep into our pet crystal ball. In it we saw the words, "Automation is coming! Get ready". The good old c. b. never fails. Result? Butler was in the field first with the best — from one man operated Roadbuilders Plants to punched-card controls for the Ready Mixed Industry.

Stay healthy,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN



Future – This is one of many designs that PNYA engineers are toying with. Termed the "gull wing" type, it calls for a combined truss and cable system.

than steel, this hangar is of reinforced concrete with the large unobstructed areas made possible by the cable suspension of two thin-shell, corrugated-shape, concrete roofs supported either side of the center section. The 5-ft deep corrugations, normal to the longitudinal axis of the building, give the long thin-shell its flexural rigidity. The cables that support the roof are anchored in walls that span between the building columns of the center section. There are 28 of these "anchor walls" spaced at 30-ft intervals along the length of the building. Four cables extend from each end of the anchor walls to provide the roof's support.

To keep up with the everchanging air transport field PNYA engineers cannot remain content with any one design. As a result they are giving their imaginations and talents free rein. New and better designs of various types are coming off their drawing boards. The "gull wing" type shown in this article is one that they are now speculating with for the future. By using cables in combination with trusses they have been able to substantially reduce the depth of the trusses which reach out a clear span of 140 ft.

This sketch of hangars built and proposed at N. Y. International Airport should illustrate certain definite trends in U. S. hangar design. The big break came in convincing owners to go over into cantilever type design rather than the conventional arch or truss type. Once this had been done the engineers began to get some imagination into their designs.

Cantilever design of one type or another, whether steel or reinforced concrete, is the trend today. To support the large cantilevers the engineers use a center section of from 60 to 100 ft in width. They take advantage of this space by letting it double for shop and office facilities at the same time. Usually this is a two story section with the second story floor suspended from the truss or crossbeams overhead. In this manner the dead load of the suspended floor acts to counterbalance and relieve some of the stresses caused by the cantilever.

There seems to be a definite economic limit on the length of span. Beyond a span of 135-140 ft the cost of a hangar soars. If steel trusses are used, above this span you get into increasingly heavier and deeper trusses. You also have to beef up the center section to take the added load. Every pound added on the end of a cantilever means a heavier structure throughout.

As to distance between trusses, the ideal distance has been found to be somewhere between 20 and 30 ft. The structural engineers point out that they can increase the spacing considerably beyond this, to say even 40 ft, but only at the penalty of increased construction costs.

What do you do if you build your hangar and along comes a plane that is bigger than you anticipated? This has already happened, and will probably continue to happen, and certain solutions have been offered: (1) a "dog house" can be erected between two adjacent cantilever trusses to provide for the plane with the overly high tail. (2) If the plane is too long, this can often be taken care of by providing a nose dock that allows the plane's nose to extend into the center section. (3) Another solution that is now being tried on the west coast is to have a diaphragm type opening in the hangar door that will allow the plane's tail to protrude, yet still be able to close around it to keep the weather out.

Key personnel in PNYA's hangar development program include John M. Kyle, Chief Engineer for the Port of New York Authority, and William C. Borland, Coordinator of Engineering for PNYA.

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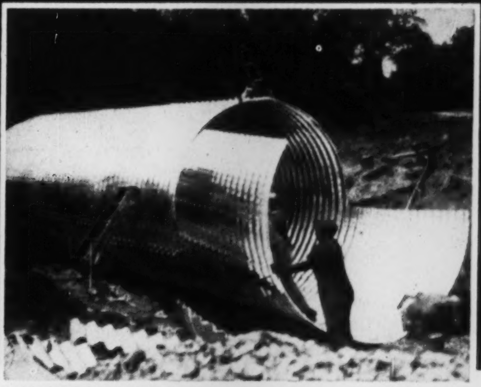
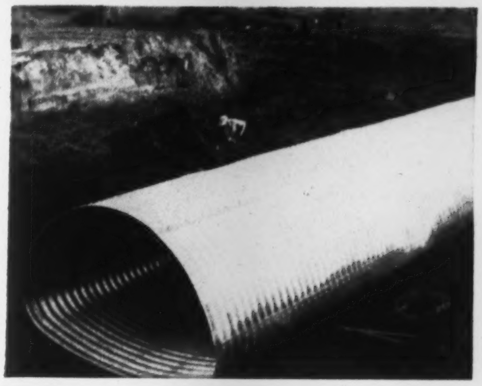
A new service by American Bridge to help you build low-cost drainage structures in record time

AMBRIDGE SECTIONAL PLATES

for pipes, arches and pipe-arches





AmBridge Sectional Plates are designed to save you valuable time and money in building low-cost drainage structures.

Made from USS Pure Iron or USS Copper Steel (whichever is stipulated in your particular specifications), AMBRIDGE Sectional Plates for pipes, arches and pipe-arches are fabricated to meet the specifications of the American Association of State Highway Officials and can be adapted to all state, railroad and government specifications.

AMBRIDGE Sectional Plates are fabricated in 2″ deep corrugations on 6″ centers with standard punching. *They are galvanized after fabrication.*

AMBRIDGE Sectional Plates are furnished to accommodate any shape or size of pipe, arch, or pipe-arch complete with bolts. Special details, such as asphalt coating, hook bolts, beveled ends, and skewed ends, are furnished as specified for each job.

ASK FOR DESCRIPTIVE FOLDER. For further information about AMBRIDGE Sectional Shapes, we suggest that you contact the office nearest you. Or, an inquiry direct to our Pittsburgh headquarters will bring detailed information. Just ask for the folder on Sectional Plates.

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NEW Homelite Concrete Vibrator Set (HIGH-CYCLE ELECTRIC)

One simple connection and you're ready to pour with the new Homelite Concrete Vibrator Set. It reduces hand labor, eliminates scaffolding and speeds placement of even the lowest slump concrete.

The high-cycle motor built into the vibrator head makes the Homelite extremely powerful and easy to use. The vibrator head has one-foot handling hose, with polarized, screw-type waterproof connection permanently installed. Any number of 7′ or 10′ lengths of pre-loaded polarized handling hose can be attached *in seconds*.

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The generator will run two vibrators simultaneously, doubling the placement speed. Heavy-duty cable, available in varying lengths, lets you place the generator in any convenient spot. Only the vibrator is in contact with the concrete and no special scaffolding or cradling is ever needed.

Ask your nearest Homelite office for a free demonstration, or write for Bulletin L-816.

Homelite vibrator runs at 10,000 vpm, best speed for vibrating concrete. Motor holds speed constant, even under full load. Speed never fades.

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A DIVISION OF TEXTRON AMERICAN, INC.

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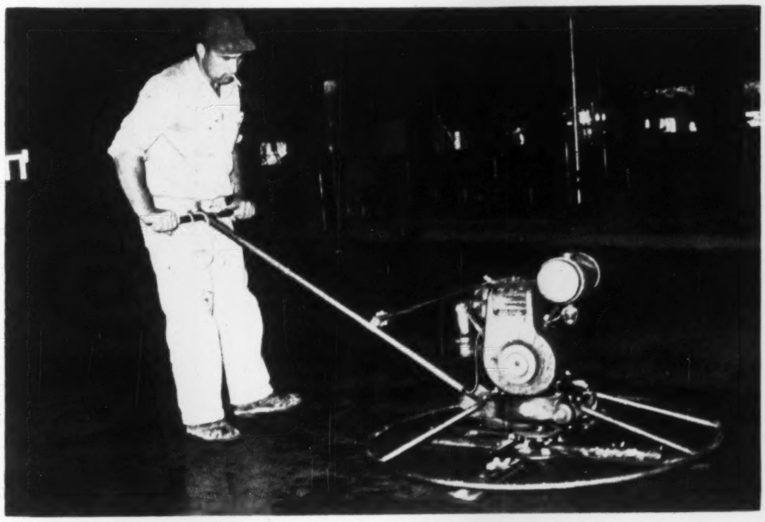
Manufacturers of Carryable Pumps, Generators, and Chain Saws



Made Bigger For Faster Finishing

A large size, 4-blade rotary trowel, capable of troweling 11 sq ft of surface per revolution, has been put on the market by the Stow Manufacturing Co.

Termed the "G46 Roto-Trowel," the new 46-in. diameter rotary machine is powered by a 6.8-hp engine. Speed of trowelling can be from 25 to 100 rpm.

According to the manufacturer, the big trowel is easy to handle and does an excellent job of floating and finishing. By adjusting a knob on the handle, the pitch of the float and finish blades can be varied. Finish blades are of chrome-vanadium steel. Other features include stationary guard ring, manual clutch controlled from handle, reversible float and finish blades, and a handle adjustable for height. Stow Manufacturing Co., 19 Shear St., Binghamton, N. Y.

Portable Machine Developed For Engineering Soil Tests

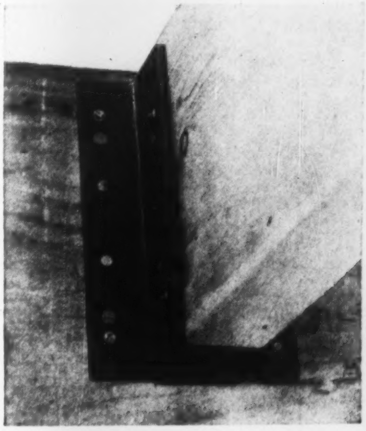
A hand-operated, unconfined compression machine has been designed for use in making field or laboratory tests of soils.

The new type of portable testing machine—weighing only 30 lb—works on a mechanical screw principle. The specimen is loaded by turning the operating handle at any desired rate. In this manner the tester can adjust loading to conform either to the uniform rate of strain or the uniform rate of loading requirements.

The load applied to the specimen is indicated on the dial of a calibrated double proving ring. When the load capacity of the outer ring is reached, the heavier inside ring is brought into action.

With a load capacity of 500 lb and a maximum platen clearance of 8 in., the machine also can be used for testing other materials such as metals, ceramics, wood and plastic parts. SOILTEST, INC., 4711 W. NORTH AVE., CHICAGO 39, ILL.

(*New Products continued on page 48*)



Supports for Wood Joists

A heavy-duty joist hanger now on the market is said to eliminate notching of subflooring, and it also enables the joist to be mounted flush with the floor beam. Made of 13-ga galvanized steel, the new hangers can be mounted on nails or lag screws. F. D. Kees Mfg. Co., Beatrice, Neb.

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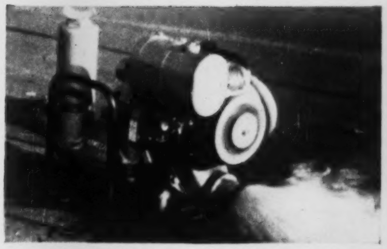
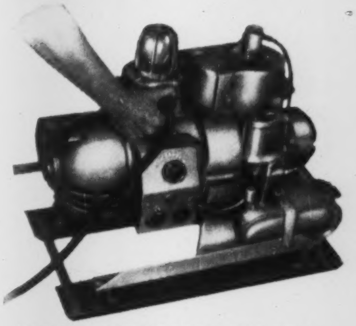
Carryable
Construction
Equipment



SELF-PRIMING CENTRIFUGAL AND DIAPHRAGM PUMPS

Sizes: 1½" to 3" — capacities to 15,000 g.p.h. for dewatering and water supply.



ELECTRIC GENERATOR SETS FOR TOOLS AND LIGHTS

Complete range of sizes and voltages up to 5,000 watts.

LIGHTWEIGHT POWERFUL ONE-MAN CHAIN SAWS

Complete line of saws with clearing and brushcutter attachments for every woodcutting job.

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PORT CHESTER, N. Y.

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Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service.

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Ford Tractors Get "Step-on" Loaders

With the features of high lift, high dumping clearance, and one-piece box frame construction, the Ford Motor Co. has announced a line of step-on industrial loaders for its Ford and Fordson Major diesel tractors.

The loaders—though similar—are specially designed for each series of tractor. The FMD (for the Major machine), for instance, has a total weight of 1,367 lb, a rated load capacity of 1,500 lb at full lift of 10 ft 7 in., and a breakaway lift capacity of 5,000 lb and a lifting time of 8 seconds at 1,800 rpm.

The Ford loader weighs 825 lb, has a rated load capacity of 1,000 lb at full lift of 10 ft 6 in., a breakaway lift capacity of 2,500 lb, and lifts in 7 seconds at 1,500 rpm. Tractor & Implement Division, Ford Motor Co., Birmingham, Mich.

Push-Button Batching Plant Can Be Set up in Few Hours

Complete automation for concrete batching—plus improved portability—is claimed for Butler Bin Co.'s new Roadbuilders' Plant.

The plant is said to automatically and simultaneously batch sand, cement and two sizes of stone with such speed that it paces two 34E dual drum pavers. Batching of all materials is controlled by one man operating a set of push buttons at the cement batcher. If desired, the truck driver can operate the sand and aggregate batchers separately from his cab through the use of push-button controls that are mounted on the bin columns.

Two batches of sand, cement, and both sizes of stone are weighed and discharged at the same time. All gates are so interlocked that they cannot discharge until the correct weight is in the hopper. And the hoppers cannot be charged until all material is out. Master controls governing any selected and specified batch proportions are located at the rear of the bin. These are pre-set for the concrete specifications and need not be touched again until resetting for new specifications.

The entire unit can be set up in a few hours. Bulk cement bins have hinge-and-pin attachments for the supporting column. These can be attached on the ground so that the columns swing into place as the crane lifts the bin. Aggregate bins are similarly designed with columns in two sets of panels, and bracing is preattached to the panels for easy field bolting. Cement elevators are in two sections with chain and buckets attached. Butler Bin Co., Waukesha, Wis.

Lightweight Conveyor Aimed at Contractor

Designed to meet the needs of fast-moving contractor operations, a new lightweight belt conveyor, now on the market, is said to be particularly adaptable for use in portable and stationary batching plants.

Called "Shelterbelt" after a design feature that protects the return belting, the conveyor can be made in any size or length without special tooling. The machine is constructed of light

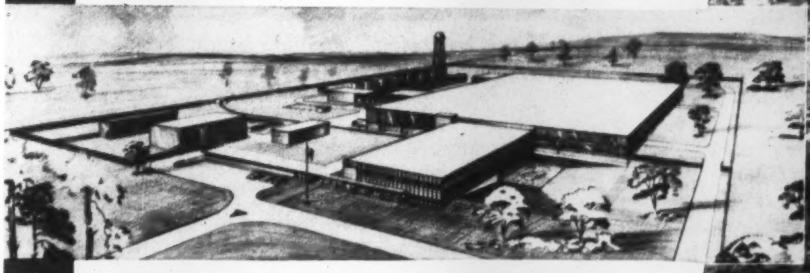
(Continued on page 52)

For Permanent, Economical Sewers and Drains

INDUSTRY CHOOSES CLAY PIPE

FAIRCHILD ENGINE DIVISION installed more than 23,000 feet of Vitrified Clay Pipe sewers and drains recently to serve the company's new $5 million plant at Deer Park, N.Y. The lines will carry many types of industrial wastes, including hard-to-handle process drainings from machines in the plant.

Like thousands of other manufacturing companies over the country, Fairchild is building for the future. You can see the foresight of this planning in the choice of Vitrified Clay Pipe for sewerage and drainage lines. Corrosive industrial waste can't affect it. Acid sewer conditions can't disintegrate it. Time can't weaken it. Clay Pipe is the one sewerage material that *never wears out.* For permanent sewers and drains—at lowest cost per year of service—always specify Vitrified Clay Pipe. It's guaranteed for 50 years.



DESIGNED AND CONSTRUCTED by the Austin Company. Job Superintendent: Walter Michaelson

Vitrified CLAY PIPE

CLAY PIPE NEVER WEARS OUT!

C-1055

NATIONAL CLAY PIPE MANUFACTURERS, INC.
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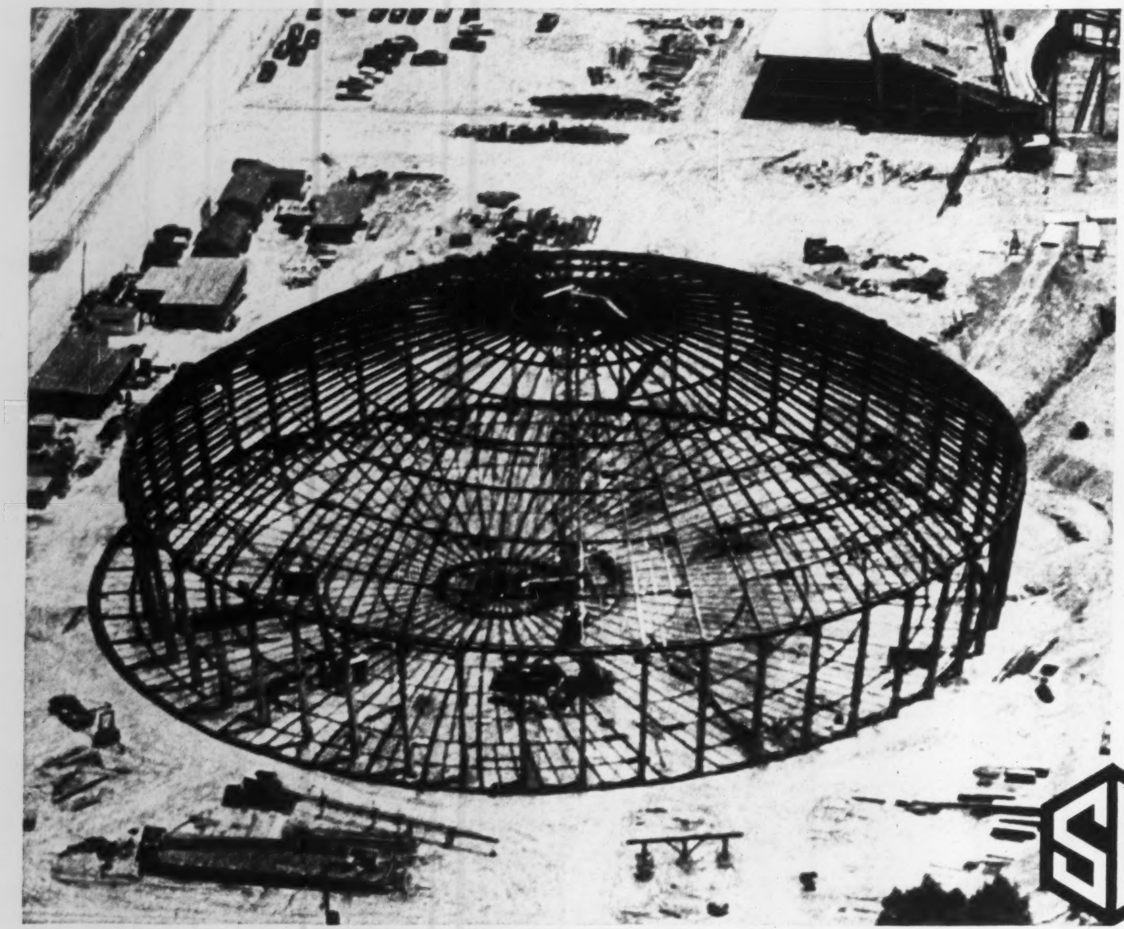
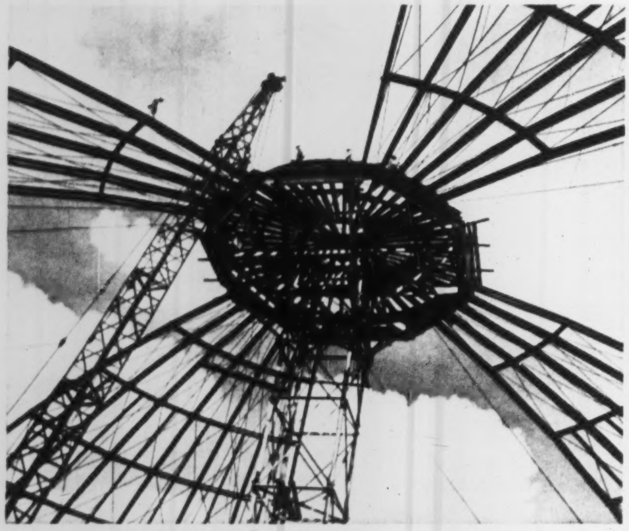
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

Progress in Public Health - Through Clay Pipe Research



Nearly complete framework for new civic center at Charlotte, N. C., features world's largest structural steel-framed dome. Dome spans 332 feet at tension ring and rises 60 feet above ring.



One of the interesting features of the construction of this coliseum is the manner of placing the spider for connecting the multitude of radial ribs at the top center of the structure.

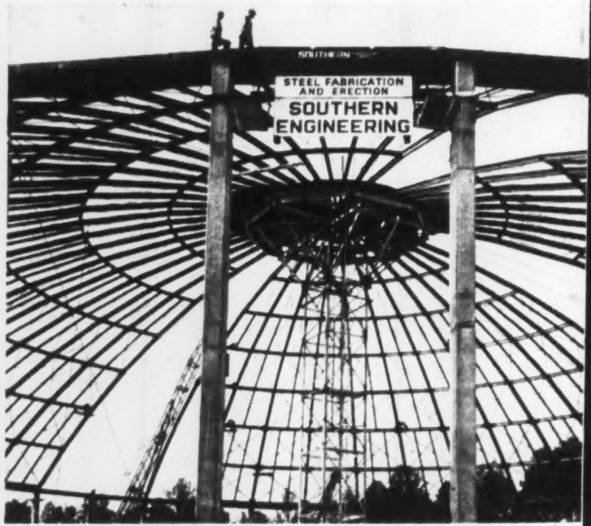

SOUTHERN
STEEL FABRICATION AND ERECTION
SOUTHERN ENGINEERING

Photo shows 110-foot temporary steel falsework tower erected by Southern Engineering to aid in construction. Constant safety supervision kept accidents at a minimum.

How using its dome saves people and money for Southern Engineering Co.

BY MR. FRIENDLY

Teamwork between contractor and American Mutual Safety Engineers cut accident rate during construction of world's largest steel-framed dome . . . has saved Southern Engineering over $30,500 in insurance premiums during past ten years!

2,600,000 pounds of structural steel were fabricated and erected for the new Charlotte, N. C., Coliseum and Auditorium by Southern Engineering. Featuring a dome span of 332 feet, this job is just one more example of the unusual and outstanding construction work regularly performed by this leading contractor.

Insured for Workmen's Compensation Insurance with American Mutual since 1939, Southern Engineering recognizes that safety *first* is a basic operating policy. Working hand in hand with American Mutual Safety Engineers, they have been able to keep accidents at a favorable minimum and thereby save over $30,500 in Workmen's Compensation premiums during the past 10 years alone! Savings like these mean lower operating costs . . . give Southern Engineering a big competitive advantage in bidding for jobs.

If you're interested in a service that can help you cut accidents and injuries . . . boost profits, write today for your free copy of "Foremanship and Accident Prevention in Construction." American Mutual Liability Insurance Company, Dept. E-1, 142 Berkeley St., Boston 16, Mass.

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non-magnetic steel for the chemical, oil and packing industries . . . for ANY installation where high resistance to heat, acids, chemicals, and corrosion is needed.

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In both size and type, there is a Kerrigan Weldforged grating for every need. Let our new catalogs prove it to you. Send for the one you think best answers your need (or ask for ALL FOUR if you wish). We will also be glad to send you a desk-size grating sample. Write Kerrigan Iron Works, Inc., General Sales Office, 274 Madison Ave., New York City.

RIVETED STEEL
where it is desired to match existing grating.

ALUMINUM
spark-proof for those whose need is strength AND lightness. Extra safe and strong. Allowable fiber stress 15,000 psi. Modulus of elasticity 10,000,000 psi.

KERRIGAN GRATING
CUSTOM-MADE FOR YOUR JOB AND SAFE—IT'S Weldforged

sheet steel with spot-welded baffle sheets to eliminate twist on the frame. Troughing roll assemblies are unnecessary. Light strap iron supports of simple construction are employed, according to the manufacturer, and the roll bracket also serves as part of the joint where sections are united. Joints are belted so that sections may be added.

A 12-in. conveyor used in a sand and gravel installation is powered by a 1½ hp electric motor with gear-reducer mounted within the frame, directly back of the head drum. The drum is chain driven around a dead shaft, and no revolving parts extend beyond the sides of the conveyor. HURD & JAMES, INC., BOISE, IDAHO.

Rock Drill, Chipping Tool: New Utility Hammer is Both

A 14-lb air-operated utility hammer has been developed for alternate use as a rock drill or chipping tool.

A simple external cam lever control permits instantaneous change from rotative to straight hammering action. Automatic rotation action is used for drilling in stone and concrete. The tool is converted to straight hammering action for starting holes, chipping, light clay-digging and demolition work.

The new hammer cuts holes up to 1⅝ in. in diameter. Exhaust air blows chips out for faster drilling and for warding off the danger of jammed steel. Simplified lubrication has been engineered into the tool.

The 17¼-in.-long tool is available in two versions: 15D for dry use and 15W for wet use where dust-control is a problem. THOR POWER TOOL CO., AURORA, ILL.

Flooring Compound Designed To Toughen Concrete Floors

Designed to stand up under the abuse of heavy steel-wheel trucks, a flooring compound just developed can be used to finish a new concrete floor; resurface or patch an older one.

Trade-named "Steel-Hard", it is composed of granular plastic resins and extra-fine, non-stone aggregates. It is claimed to be able to take 20-ton loads.

The manufacturer states that the compound can be applied without roughening the old surface and can be ready for use 4 to 6 hours after being put down. Light-gray in color, the product is shipped ready to use. MONROE CO., INC., 10703 QUEBEC AVENUE, CLEVELAND 6, OHIO.

Publications

Welded wire mesh—How to design for welded wire fabric in building construction, and its application, is described in a 45-page booklet that has proved popular enough to be in its second printing within a year. Topics covered include design, applications and details of wire mesh in short-span construction; cinder concrete floor and roof construction; cast-in-place concrete joist construction; steel joist and lightweight steel beam construction; cast-in-place gypsum roofs; fireproofing steel; tables of maximum bending moments, and maximum resisting moments for various strength concrete; concrete slabs-on-ground; shrinkage and temperature reinforcement; tilt-up construction and cement gun work. Wire Reinforcement Institute, Inc., National Press Building, Washington 4, D. C.

Timber structures—Pictures and descriptions of a wide range of wood-framed structures, representing an almost complete cross section of the building industry, will be found in a 23-page booklet that is available without cost. Ranging from Westchester Airport's 250-ft-span bowstring-truss hangars to a covered bridge in Charlemont, Mass., the booklet includes timber bridges, trestles, warehouses, motels, towers, theatres, supermarkets, factories, and dormitories. In each case, the Teco connector system was used. Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C.

Water systems—Taller & Cooper's Bulletin 503 entitled "Remote Control Systems", puts special emphasis on application of control equipment in municipal water supply systems. More specifically, it describes the application of electronic equipment to control of pumps. This application is not limited to water supply, but extends also to chemical and materials supply systems in industry where remote control of metering and feed are desired. Taller & Cooper, Inc., 75 Front St., Brooklyn 1, N. Y.

Sewage reduction—An 8-page illustrated booklet on the "Griductor" comminutor has been published to describe how reduction of solids in sewage is accomplished by cutting and shearing in this device. The booklet further explains how operation costs can be minimized by proper rotation of cutter disks. The publication is available from Infilco, Inc., Tucson, Ariz.

FOR REMOTE CONTROL JOBS on a great variety of CONSTRUCTION EQUIPMENT

TRU-LAY *Flexible* PUSH-PULLS

are Dependable and Accurate even under the most adverse conditions. They perform effectively under extremes of Heat or Cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls means the virtual Elimination of Maintenance.

Widely Used on Construction Equipment

Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on Tractors and their accessories, Power Shovels, Winches, Road Graders, Road Oilers, Dump Trucks, Snow Plows, Engine-driven Pumps, Rock Crushers, etc.

On Construction Equipment these dependable Push-Pulls are used for the remote control of Hydraulic and Air Valves, Brakes, Clutches, Transmissions, Throttles, Chokes, Governors, Power Take-Offs, and on many other applications.

TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances up to 150 feet or more.

For full details, write for DATA FILE.

***Advantages** of Tru-Lay Push-Pull flexibility and simplicity are pictured below*

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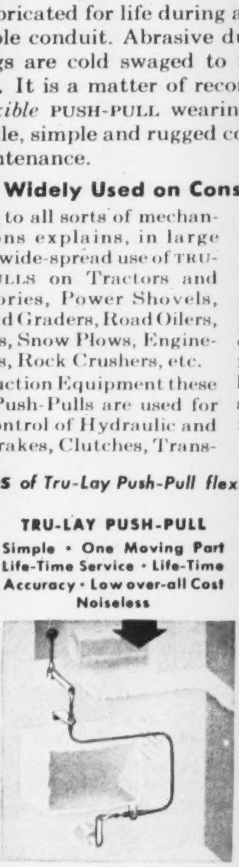
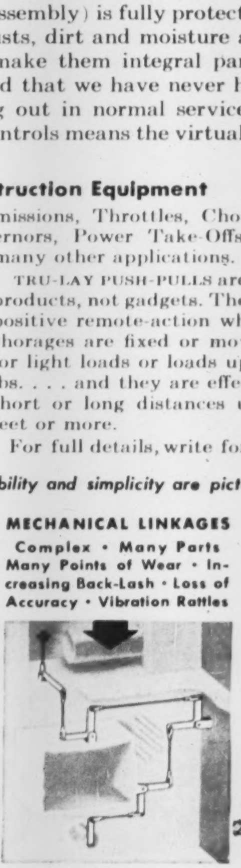
Simple • One Moving Part Life-Time Service • Life-Time Accuracy • Low over-all Cost Noiseless



MECHANICAL LINKAGES

Complex • Many Parts Many Points of Wear • Increasing Back-Lash • Loss of Accuracy • Vibration Rattles



"Solid as a rod but *Flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions as shown in the picture at the left . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, Accurate, Adaptable, Rugged . . . they are the ideal remote controls for Construction Equipment.

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Hammond, Ind. Houston, Tex. Jacksonville, Fla.

SAVE TIME AND FLOOR SPACE

KINNEAR Rolling Doors

Kinnear Rolling Doors open upward. They coil *compactly* above the opening. Surrounding floor, wall and ceiling space is *always fully usable*. The interlocking-slat curtain (originated by Kinnear and famous for over 50 years) give *all-steel protection* against fire, storms, rioters. Manual or motor operation. Built to fit any opening. Write for new catalog.

The KINNEAR Manufacturing Co.
1820-40 Fields Ave., Columbus 16, Ohio
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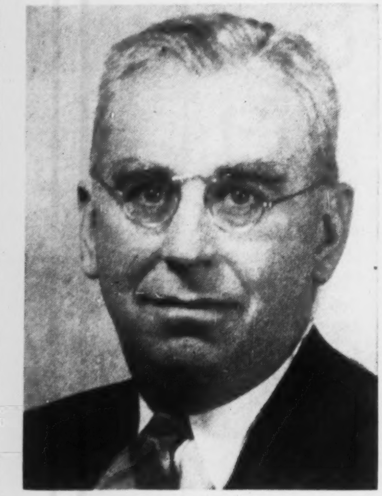
KINNEAR ROLLING DOORS
Saving Ways in Doorways

Men and Jobs



T. B. Nolan

S. W. Benedict

Assistant Director Moves Up To Head Geological Survey

Thomas B. Nolan has been named director of the United States Geological Survey. He was appointed by President Eisenhower to succeed William E. Wrather, who has retired.

Nolan, a career civil service employee since 1924, has been assistant director for over 12 years. He is past president of the Society of Economic Geologists and is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Noted for his contribution to the science of tungsten, Nolan received the Spendiaroff Award of the XVI International Geological Congress in 1933, and two years ago was awarded the K.C.Li Gold Medal.

Wrather, who is retiring, has made many notable contributions to the geological work of the survey during his term of office. He started an extensive program of investigation of radioactive raw materials; developed and applied new methods for mineral exploration; and expanded investigations in engineering geology.

Retirement, Promotions In Master Builders Co.

The Master Builders Co., subsidiary of American-Marietta Company, has elected Stephen W. Benedict as vice president of research and engineering.

He succeeds Edward W. Scripture, Jr., who is retiring as vice president in charge of research after 15 years with the company.

E. W. Scripture, Jr.

Benedict, who joined the company as director of research in 1948, is a civil engineering graduate of the University of Illinois. He has served as materials research engineer with the National Advisory Committee for Aeronautics and for 10 years was associated with the National Bureau of Standards as materials engineer in its cement and concreting materials section.

Other company promotions include appointment of Herbert W. Cook, who used to be chief of the concrete division of the Corps of Engineers' Waterways Experiment Station in Jackson, Miss., as director of engineering, and Thomas M. Kelley, who has served with both the Corps of Engineers and the National Bureau of Standards, as director of research.

(*Men and Jobs continued on page 56*)

1

2

AN ANALYSIS
OF SIX POPULAR ROOF CONSTRUCTIONS

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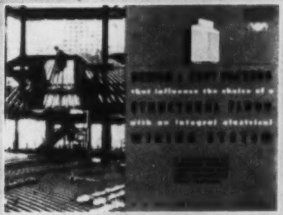

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Robertson Skylights

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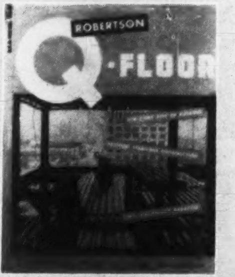

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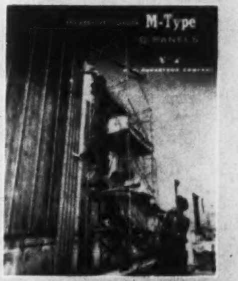

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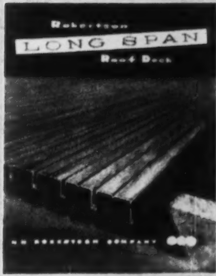

8

ROBERTSON
VENTILATORS

Write- for these free books from Robertson's technical library

1. Acoustical Data on Q-Deck: It has long been known that the fluted underside of steel deck provides some acoustical value, yet demand for more has led to this new low-cost method. Application details and test data are included.

2. An Analysis of Industrial Roof Construction: This valuable booklet compares all the better-known roof types (flat, monitor, bow-string, high-low bay, saw tooth) on the basis of structural steel, volume, roofing, sash area, flashing, ventilation and daylighting.

3. Design and Cost Factors of Structural Floor Wiring: This study compares Q-Floor with other conventional floor systems using underfloor duct. Based upon a typical multi-story building, the book is replete with charts and cost analyses of all structural components.

4. Daylighting Cost Analysis: This new and unusual study contains a questionnaire, which when properly filled out will reveal how quickly scientifically planned natural daylighting will pay for itself in a structure through savings in electricity. All data are substantiated.

5. New Composite Q-Floor Catalog: This newly revised catalog contains many examples of the latest Q-Floor buildings and a full exposition of Q-Floor advantages. Structural details and specifications are more complete than ever before.

6. New M-Type Q-Panel Catalog: Recent newcomer to the Robertson product family is the M-Type Q-Panel which possesses unique advantages over other types of modern curtain wall construction. The book contains 3 pages of structural details plus complete specifications.

7. New Long-Span Q-Deck Catalog: Another new Robertson product is this sturdy, yet exceptionally long-span deck. Easy to handle and erect despite its length up to 32 feet, it is especially designed for schools and supermarkets and other structures in which unbroken spans and a saving of structural steel is beneficial.

8. Ventilation Engineering Booklet: More than a ventilator catalog, this booklet not only describes products, but contains detailed tables of exhaust capacities, based upon average wind velocities, temperature differences and height above intake. Use the coupon below.

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TO START YOUR FREE "NELWELDER" SUBSCRIPTION

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Men and Jobs Briefs . . .

• **Associations** – Southern California chapter of A.G.C. elected **Walter F. Maxwell** as president, succeeding **Carl H. Wittenberg . . . William C. Ward,** of J. T. Ward & Son, has been reelected president of Allied Construction Industries of Delaware . . . Toncan Culvert Manufacturers Assn. appointed **Bruce Taylor** of Tampa, Fla. as president and reappointed **Hubert E. Snyder** as managing director.

Newly-elected president of the Constructors Association of Western Pennsylvania is **Edward McCrady, Jr.,** president of Edward McCrady, Jr. & Son Company of Pittsburgh . . . **Harry R. Haloran,** president of the Conduit and Foundation Corp. has been elected president of the Contractors Association of Philadelphia.

• **Corps of Engineers–Roy G. McGlone,** chief of operations, Southwestern Division, is retiring after 48 years of service. His successor is **Malcolm R. Gilpin,** former chief of the construction division of the Alaska district . . . **Col. W. D. Milne** will attend the Army War College, Carlisle, Pa., after completing his present assignment as Louisville district engineer at Louisville, Ky., late this summer.

• **Careers**–President Eisenhower has named **Walter E. Blomgren,** a retired official of the Bureau of Reclamation, as the federal government's representative in forthcoming negotiations with various states on water resources . . . Washington State Highway Commission appointed **R. H. Kenyon** to the new position of chief engineer of plans and contracts and **Herbert C. Higgins** as engineer of toll facilities.

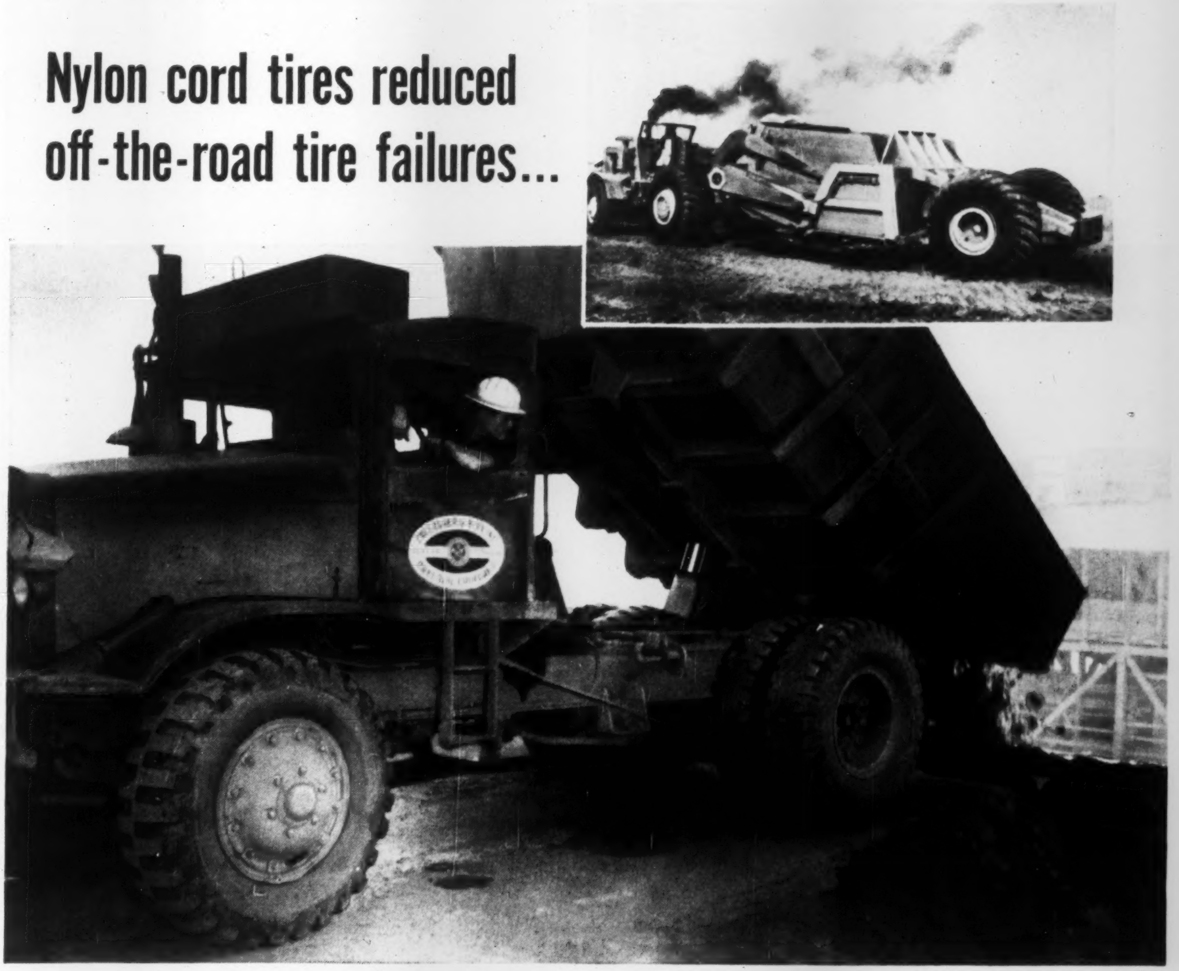
South Carolina Highway Department promoted **Theron J. Hendrix,** former assistant construction engineer, to the new post of assistant urban engineer and named **Salvadore La Torre,** former assistant bridge engineer, as Hendrix's successor.

• **Business–R. M. Hand** resigned from Merritt-Chapman & Scott Corp. to join the firm of Corbetta-Coviles on Navy installations in Rota, Spain . . . **Karl A. Sinclair** resigns, effective March 1, as the special engineer in charge of construction of the Honolulu, T. H., Koolau Mountain traffic tunnel.

Sandwell & Company Ltd., Vancouver, B. C. consulting engineers,

(*Continued on page 58*)

Nylon cord tires reduced off-the-road tire failures...



NOW NYLON CUTS TRUCK TIRE COSTS, TOO

JOHN GALLAGHER, Gallagher & Burk, Inc., Oakland, California, reports:

"We tried our first nylon cord tires on heavy, off-the-road equipment, where tires have to be able to take it. When we saw how they cut down tire failures, we began switching our trucks to nylon cords, too.

"Since then we've had far fewer truck tire failures—less carcass damage and fewer impact breaks. What's more, nylon cord truck tires give us 33% more retreads, a big help in bringing down tire costs.

Plans an All-Nylon Fleet

"There's no doubt about it—we're sold on nylon cord tires. With 350 now in service, we specify nylon cord tires for all replacements and on all new equipment. Soon we expect to have a 100% nylon cord fleet."

PROVE TO YOURSELF that nylon cord truck tires give more mileage, more retreads—lowest cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes the tough nylon yarns, does not produce tires.)

DU PONT NYLON for TIRE CORD

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

NOW . . . IN PASSENGER-CAR TIRES, TOO . . . THE STRENGTH OF NYLON . . .
FOR UTMOST SAFETY . . . SUREST PROTECTION AGAINST TIRE TROUBLE

For UNDERPASS DRAINAGE

SUBMERSIBLE EJECTOR

New! with 6" DISCHARGE!

A "Big Brother" to the famous 3" and 4" Pumps

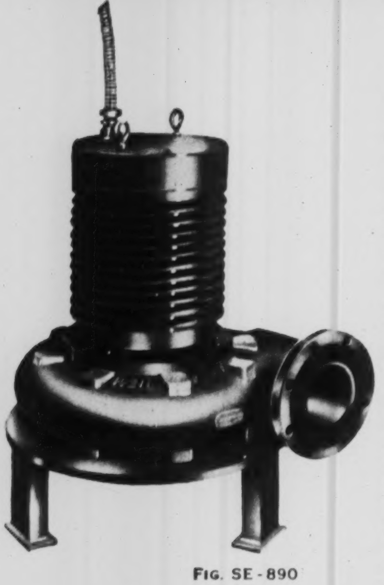


FIG. SE-890

NO PUMP HOUSE REQUIRED
Capacities to 2000 GPM

The new ejector designed for completely submerged operation is constructed with the same engineering features that have made the 3" and 4" Submersible Ejectors so trouble-free and efficient. It can be supplied with 5" or 6" discharge, with heads to 70 feet and capacities to 2000 GPM.

The new pump has been developed to answer the need for low cost installations where large quantities of water must be drained quickly. It is particularly adapted for highway underpass drainage and is designed for continuous operation during flood periods. The NON-CLOG Impeller will handle 3½" solids.

Can be supplied with control systems having no moving parts in the pits. Multiple installations are furnished with controls to program the operation for load requirements.

CONSTRUCTION FEATURES:

Motor and bearings are hermetically sealed. The motor, housing, drive shaft and impeller — all of the working parts — are an integral and interchangeable unit and can be removed without disturbing the piping. They are not subject to corrosion, deterioration or injury when standing idle—regardless of weather conditions.

The NON-CLOG Impeller is of manganese bronze; pump shaft stainless steel; permanently sealed ball bearings; volute type casing of nickel iron; motor windings of special design and construction are permanently non-corrosive; motor housing machined and sealed to exclude dirt and water.

Ask for Bulletin SE 860 C

weil PUMP CO.

1528 NORTH FREMONT STREET • CHICAGO, ILLINOIS

appointed two new staff specialists: **Ralph Davis,** who will concentrate his efforts in the firm's hydro electric program, and **William L. Cunningham** who will be engaged in the company's pulp and newsprint activities.

• **Retirements**—From the New Jersey State Highway Department, **Alexander W. Muir,** director and chief engineer of maintenance and operations after 39 years, and **Philip Voss,** a special assignments engineer after 25 years.

Obituaries

William C. Woodard, 79, inspector for the Kentucky State Highway Department and former highway contractor, died Feb. 10. It was his Bardstown firm that paved the first road 38 miles from Bardstown to Louisville 32 years ago. He also was employed by the city of Lexington to manage utilities-construction projects.

J. Houston Johnston, 89, retired civil engineer, died Feb. 7 in Atlanta, Ga. Specializing in railway evaluation engineering, he served the Louisville & Nashville, Illinois Central and Savannah Railroads for periods aggregating over 30 years. He was consulting engineer for the Georgia Public Service Commission for several years and from 1915 until his retirement at the end of World War II he served as special engineer on valuation of Georgia's state-owned Western & Atlanta Railroad. He was a director of the ASCE from 1928 to 1938.

Gabriel R. Solomon, 75, retired consulting engineer who assisted in the building of subways in New York, died Feb. 16. An engineering graduate of Rensselaer Polytechnic Institute in 1902, Solomon was a partner with the engineering firm which now is Abbott-Merk & Co.

Edward F. Blake, 57, president of McLean Contracting Co., Baltimore, died Feb. 12. A civil engineering graduate of the University of Virginia in 1921, Blake joined the contracting firm as chief engineer in 1932 and was named president of the company in 1953.

Clinton T. Bissell, 82, who retired in 1951 after 43 years as an engineer for the National Board of Fire Underwriters, died Feb. 14 in Montclair, N. J. He was primarily responsible for the drafting of the national building code recommended by the board, and served as the board's consultant to cities throughout the country.

The JACKSON MULTIPLE VIBRATORY COMPACTOR

Used on the VAST MAJORITY *of . . .* IMPORTANT ROAD-BUILDING JOBS!

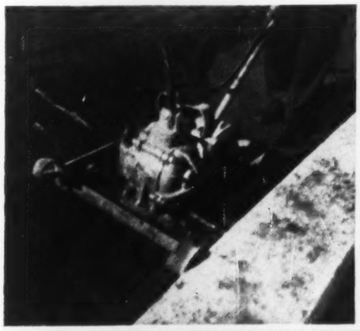
On all of the new toll roads and on dozens of other highway and airport building projects JACKSON MULTIPLE COMPACTORS are the predominant medium for consolidating the granular soil sub-bases and the base courses of sand, gravel, rock or slag in waterbound and penetration macadam construction. They're also very extensively and successfully used on large area fills of various other types.

The popularity of this equipment has grown by leaps and bounds as one contractor after another discovered that with it specified densities can be achieved with greater uniformity, more economically and in less than one-half the time required with equipment of other types. Moreover, the Jackson Multiple will get into places larger equipment cannot reach, and for the really tight spots, individual compacting units may be detached, fitted with operating handles and operated like a standard, self-propelled manually guided compactor.

If you have any job requiring granular soil compaction, it will pay you to know specifically what Jackson Vibratory Compactors will do. See them at your nearby Jackson Distributor. Literature and Distributor's name on request.

As indicated by the adjacent photos, the JACKSON MULTIPLE is readily adaptable to widening projects of any width.

Jackson manually-guided, self-propelled vibratory compactors deliver 4200 2-TON blows per minute. Achieve specified density of granular soils in layers as thick as 10" at the rate of 1800 sq. ft. per hr.



One man can readily operate a twin hook-up of Jackson Compactors, thereby virtually doubling production. Current is usually supplied by power plant on auto trailer (single or twin unit) with hydraulic pick-up of Compactor.

JACKSON
VIBRATORS, Inc.
LUDINGTON, MICHIGAN

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager

J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.

J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., East Haven** — SCHOOL — BA 3/12 — Town School Dpt., Town Hall, Junior High School, Rte. 100, $1,500,000. Schilling & Goldbecker, 18 Trumbull St. New Haven, archts. Milton T. Carbell, 18 Trumbull St., New Haven, struc. engr.

BUILDINGS—SLC

▲ **R. I., Providence** HOSPITAL WING—Providence Lying in Hospital, 50 Maude St., soon lets contract, wing addn $1,500,000. Extended date. Howe, Prout & Ekman, 17 Customhouse St., Providence, archts. CD 2/9.

HEAVY CONSTRUCTION—LB & CA

▲, **Petricca Constr. Co.**, 534 West St., Pittsfield, Mass. LB **$1,345,535**. Schedule 1, Hoosic River Basin, Adams Flood Control Proj. No. 5, Adams, CIVENG-30-075-56-6, MASSACHUSETTS. U. S. Eng., 111 E. 16 St., New York, N. Y. Bids Feb. 16, CD 2/8;
Philsan Co., 152 W. 42 St., New York 36, N. Y. LB $173,716. Schedule 1. (Massachusetts).

† **Theodore Loranger & Sons**, 404 Nash Rd., New Bedford, Mass. CA **$531,000**. Bid Item No. 3, bombing targets, No Man's Island, NOY 90981, Spec. 48707, MASSACHUSETTS. First Naval Dist., 495 Summer St., Boston, Mass. Bids Dec. 16, awarded Feb. 13. CD 12/22, under LB.

▲† **Jefferson Constr. Corp.**, 75 First St., Cambridge, Mass. CA **$1,780,000**, est. $1,500,000 $1,750,000. airmen's dormitories, communications transmitter power and receiver bldgs., ENG-19-016-56-79, CHICOPEE FALLS, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 1/31, under LB.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass., CA Est. **$8,000,000**. FACTORY, in Wauregan Section east of Junction Rtes. 12 and 202, PLAINFIELD, CONN. American Radiator & Standard Sanitary Corp., 40 W. 40 St., New York, N. Y. Prack & Prack, Martin Bldg., Pittsburgh, Pa., archts.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Brooklyn STREET and YARD IMPRVS.—BA 3/8 New York City Housing Auth., 299 Broadway, New York, Zone 7, street and yard imprvs. and topsoil and planting for Sumner Houses Sect. 1, Proj. No. NYS (58-4) located in area bounded generally by Myrtle Ave., Lewis Ave., Broadway, Park Ave. and Sumner Ave. Plans deposit $25 each.

HEAVY CONSTRUCTION—LB & CA

Foster Newman Contg. Co. & Leonard Contg. Co., 36-22 13 Ave., Brooklyn, N. Y. LB **$436,060**. bathhouse and food concession bldg. south of Oriental Blvd., east of Ocean Ave., in Manhattan Beach Park, BROOKLYN, N. Y. Comr. Parks, Dpt. Parks, The Arsenal Bldg., Central Park, 64 St. and Fifth Ave. New York 21, N. Y. Bids Feb. 8. CD 1/20.

† **Michael Contr. Co.**, 142 19 St., Brooklyn, N. Y., LB **$707,707**. Special AAA Facilities, vicinity of Hanover, Morristown, NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 16. CD 1/25.

† **Arundel Corp.**, foot of Fulton St., Brooklyn, N. Y., LB **$309,818** (2 bidders) dredging in Newark Bay Branch and Inshore Channels, to Port Newark Terminal, Union and Essex Counties, CIVENG-30-075-56-46, NEW JERSEY, U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 16. CD 1/26.

▲ **LaFera Contg. Co.**, 149 Verona Ave., Newark, N. J. CA **$1,285,000**. Contr. 55, Turtle Creek Interceptor, PITTSBURGH, PA. Allegheny County Sanitary Auth., 200 Ross St., Pittsburgh, Pa. CD 2/7, under LB.

▲ **Wright Contg. Co.**, Durham, N. C. LB **$2,454,856**. Contr. PT-122, section of north approach, incl. ramps, retaining walls, 3 underpasses, drainage and roadway, lighting part of Patapsco Tunnel Proj., MARYLAND. State Rds. Comn., 108 E. Lexington St., Baltimore 2, Md. Bids Feb. 9. CD 1/17.

BUILDINGS—LB & CA

▲ **E. I. duPont deNemours & Co.**, duPont & Nemours Bldgs., Wilmington, Del. Own Forces. Total est. **$3,000,000** expansion, modernization MFG. PLANT, incl. two 2 story masonry bldgs., NEWBURGH, N. Y.

▲† **Gramercy Constr. Corp.**, 114 Liberty St., New York 6, N. Y. LB **$1,236,832** (11 bidders) altering BLDG. at U. S. Appraisers Stores, 201 Varick St., NEW YORK, N. Y. General Services Admin., P. Bldgs. Service, in Bid Room of Business Service Center, 250 Hudson St., New York 13, N. Y. Bids Feb. 15. CD 2/10.

▲ **Purcell Bros.**, 171 Preston St., Ridgefield Park, N. J., CA **$1,046,500**. general contract. COUNTY WELFARE HOME, POMONA, N. Y. Bd. Supervs. Rockland Co., County Court House, New City, N. Y. CD 1/31, under LB.

▲ **S & G Padula Builders, Inc.**, 181 N. Washington Ave., Bergenfield, N. J., CA **$1,950,000**. 81 HOUSES on former Heppenheimer Estate, TENAFLY, N. J. Walnut Manor Homes, c/o contractor. Harsen & Johns, Piermont Rd. and Summitt St., Tenafly, N. J., archts.

▲ **Kaiser Engineers Div., Henry J. Kaiser Co.**, 1924 Broadway, Oakland, Calif. CA Est. **$16,000,000**. design and construct 100,000 kw steam POWER PLANT coal handling facilities and water pumping plant at zinc plant, JOSEPHTOWN, PA. St. Joseph Lead Co., 250 Park Ave., New York, N. Y.

▲ **John A. Volpe Constr. Co.**, 1507 M St. N.W., Wash., D. C. CA **$1,194,649**. Rollingcrest Junior High School, Chillum and Sargent Rds., Hyattsville, UPPER MARLBORO, MD. Prince George's Co. Bd. Educ., Upper Marlboro, Md. CD 2/16, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

Va., Lynchburg BA 4/3—City, at office, Mr. Robert D. Morrison, city mgr., Municipal Bldg., sanitary sewerage sys. and sewage treatment plant. Plans deposit $75 per set Div. I, II and III, sanitary sewerage sys.; Plans deposit $50 per set Div. IV and V, sewage treatment plant. Wiley & Wilson, Courtland Bldg., 620 Court St., consult. engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH CAROLINA** State Hy. Dpt., Hotel Jefferson, Columbia,

S. C. **Cherokee, Inc.**, Sumter Hy., Columbia, S. C. LB **$879,604** (8 bidders) b. conc. surf. 19.252 mi. S. C. Docket No. 40.435, F.A. Proj. F 423 (3), Richland Co.;

S. C. **Bituminous Constr. Co., Inc.**, Whitmire, S. C. LB **$134,153**. (11 bidders) surf. 3.182 mi. Road S-202; 2.797 mi. Road S-521; 3.059 mi. Road S-211; 2.98 mi. Road S-231; 21.62 mi. Road S-172, S. C. Dockets Nos. 36.312 and 36.313, F.A. Proj. S 261 (2), Newberry Co.; LB **$169,847** (10 bidders) bit. surf. 3.679 mi. Road 41; 4.487 mi. Road 41; 3.534 mi. Road 107; 3.629 mi. Road 162; 1.49 mi. Road 163; 0.642 mi. Road 73; 0.986 mi. Roads 167 thru 173; 0.656 mi. Roads 101, 174 and 178, S. C. Dockets Nos. 3.291 and 3.292, F.A. Proj. S 135 (2), Allendale Co.;

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: **Before and including appointment of engineers or architects.**

BIDS ASKED: BA **(new announcements only). For full calendar, see also preceding issues.**

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB **On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.**

CONTRACTS AWARDED: CA **Except awards to low bidders previously reported in low bidder stage.**

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily

S. C. **Dixieland Constr. Co.**, Orangeburg, S. C. LB **$88,100**. (7 bidders) bit. surf. 2.058 mi. Road S-61; 2.367 mi. Road S-62; 4.03 mi. Road S-92, S. C. Docket No. 43.338, F.A. Proj. S 919 (1), Sumter Co.;

S. C. **Carolina Contg. Co., Inc.**, 1042 Adeline Ave., Columbia, S. C. LB **$79,193**. (5 bidders) bit. surf. 7.131 mi. Roads 219, 493 thru 497, 499, 176 and 508 thru 523, S. C. Docket No. 2.382 mi., Aiken Co.;

S. C.—**W. M. Reagan & Sons, Inc.**, Sumter Hy., Columbia, S. C. LB **$93,046**. (9 bidders) bit. surf. 5.467 mi. Roads 447 and 63; 1.257 mi. Road 31; 2.804 mi. Road 430; 1.489 mi. Roads 287, 290, 296, 450, 451 and 431, S. C. Dockets Nos. 32.383 and 32.385, Lexington Co.;

S. C.—**Reeves Brothers Constr. Co., Inc.**, Easley, S. C. LB **$364,519**. (9 bidders) Alt. 1, bit. surf. 3.443 mi. State Rte. 28 and U. S. Rtes. 76 and 123, S. C. Docket No. 37.367, F.A. Proj. F 38 (10), Oconee Co.;

S. C.—**Santee Constr. Co., Inc.**, Walterboro, S. C. LB **$188,555**. (7 bidders) surf. 5.008 mi. Road S-202; 6.675 mi. Road S-202; 6.675 mi. Roads S-119, S-638, S-640 and S-104; 1.175 mi. Road S-562; 2.06 mi. Road S-607; 0.5.65 mi. Roads S-1023, S-232, S-968 and S-231; 0.46 mi. Road S-51, S-119 and S-1059; 0.243 mi. Roads S-641 and S-961, S. C. Dockets Nos. 38.455 and 38.456, F.A. Projs. S-961 (1), S-761 (2), S-547 (2), S-964 (1), Orangeburg Co.;

S. C. **Theo Brothers**, Woodruff, S. C. LB **$93,790**. (11 bidders) bit. surf. 2.348 mi. Road 26; 4.531 mi. Road 98; 1.134 mi. Roads 153 thru 156 and 158, S. C. Dockets Nos. 30.333 and 30.336, F.A. Proj. S 927 (1) Parts 1 and 2, Laurens Co. Bids Feb. 14. CD 2/3.

† **Duval Eng. & Contg. Co.**, 1746 E. Adams St., Jacksonville, Fla., LB, **$302,860**. maintenance dredging in St. John's River between Jacksonville and Atlantic Ocean, Ocean Co., ENG-08-123-56-41, FLORIDA. U. S. Eng., Box 4970, Jacksonville, Fla. Bids Feb. 14. CD 1/31.

† **Robert E. Lee & Co.**, Manning, S. C., LB **$488,615**. Levee 25, Central & Southern Florida Flood Control Proj., CIVENG-08-123-56-40, FLORIDA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Feb. 14. CD 1/25.

▲† **Noonan Constr. Co., Inc.**, Box 470, Pensacola, Fla., LB, **$1,119,964**, operational parking area and access road, Forrest Sherman Field, Naval Base Training Command, PENSACOLA, FLA. Officer in Charge of Construction, Bldg. 45, Naval Air Station, Pensacola, Fla.

† **Rubin Constr. Co.**, West Palm Beach, Fla., LB, **$456,718**, rehabilitation drainage sys. and runway shoulders exten. and end zones, Palm Beach Air Force Base, ENG-08-123-56-46, WEST PALM BEACH, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Feb. 14. CD 1/16.

ALABAMA State Hy. Dpt., Montgomery,
M. & W. Constr. Co., Tupelo, Miss., CA, **$623,712**. grading 8.374 mi. Guntersville-Huntsville Rd., Marshall and Madison Counties. Bids Dec. 16. CD 1/5, under LB.

MIDDLE WEST

BUILDINGS—BA

Ind., Porter—SCHOOL—BA 3/6—Portage Twp. Bd. Educ., Central Ave. and Willow Creek Rd., Portage Central High School. $520,000. Extended date. CD 1/9.

HEAVY CONSTRUCTION—LB & CA

† **Shaw & Estis**, 1407 S. Akard St., Dallas, Tex., LB **$318,854**, est. $287,150 (7 bidders) dining hall, Wright-Patterson Air Force Base, ENG-15-029-56-11, DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Feb. 14. CD 12/30.

BUILDINGS—LB & CA

Hotze-Kuntzler & Co., 7520 Montgomery St., Cincinnati, O. Own Forces. **$660,000**, twenty-two 1 and 1½ story, bsmnt., brick HOMES, near southwest corner Galbraith and Kenwood Rds., CINCINNATI, O. Nunlist & Frolicher, Traction Bldg., Cincinnati, O. engrs. Awarded Feb. 13.

▲ **Henry C. Beck Co.**, First National Bank Bldg., Atlanta, Ga., CA, **$5,000,000**. OFFICE, GARAGE and WAREHOUSE BLDG., CLEVELAND, O. Pennsylvania R. R. (Central Region), D. L. Sommerville, ch. engr., Penna. Station, Pittsburgh 22, Pa. Wyatt C. Hedrick, 5201 Fannin St., Houston, Tex., archt.-engr. CD 1/11.

▲ **Bonny Home Builders**, 7411 Wooster Parkway, Parma 29, O. Owner Builds. **$5,250,000**. 240 ranch-type HOMES, 90-acre site at Hoertz Rd. and Pleasant Valley Rd., PARMA, O.

(Continued on page 62)

LONG LENGTH

concrete pipe

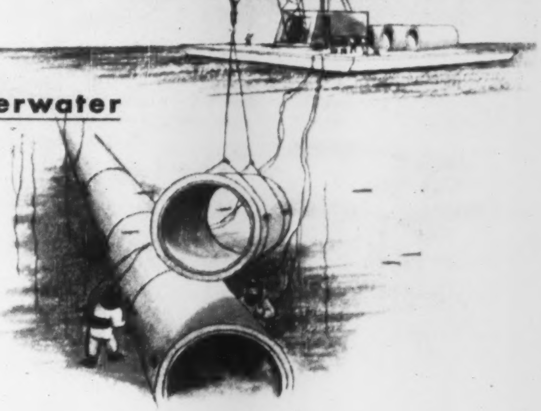
with

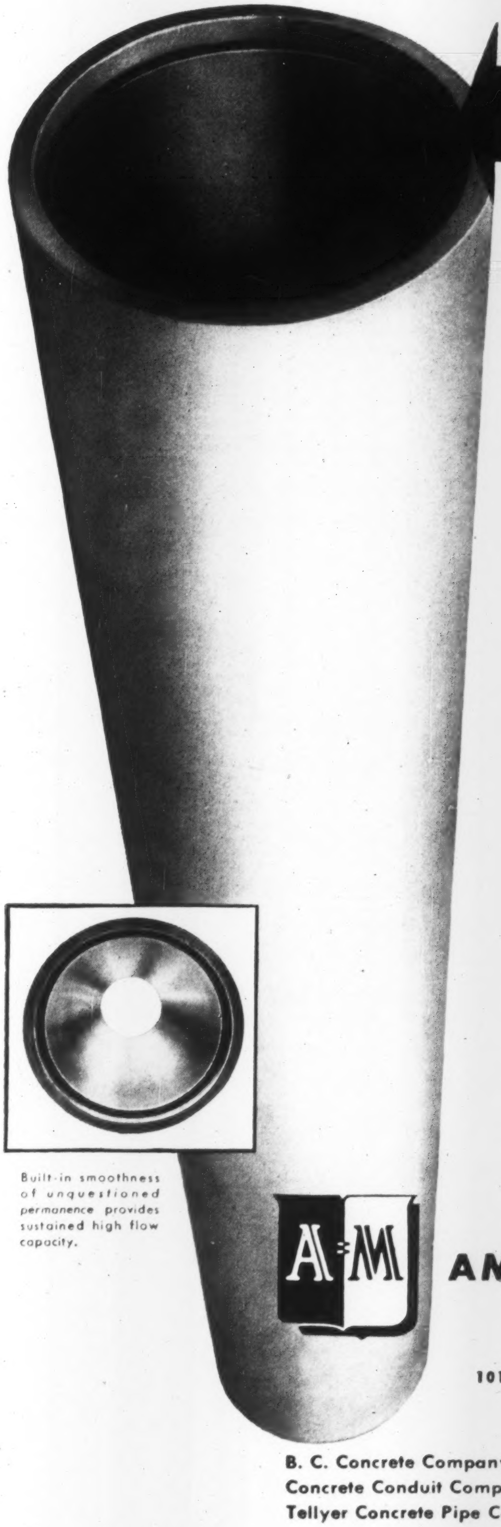
RUBBER and STEEL

AMSEAL JOINTS

for fast efficient installation—

even underwater





Built-in smoothness of unquestioned permanence provides sustained high flow capacity.

Whether underwater or not, long lengths speed installation by reducing handling and joint-making and results in lower initial costs. The reduced number of joints and the improved flow capacity also mean savings in operation and maintenance.

The "pressure proven" rubber and steel AMSEAL joint provides a flexible but positive water-tight seal against costly infiltration or leakage. For underwater work, subaqueous connections are provided to simplify installation.

Take advantage of long length concrete pipe with AMSEAL joints for projects involving water intakes, sewage outfalls, inverted siphons, intercepting sewers, and low pressure sewer and water mains.

Our technical staff will be pleased to assist you with your pipe problems.

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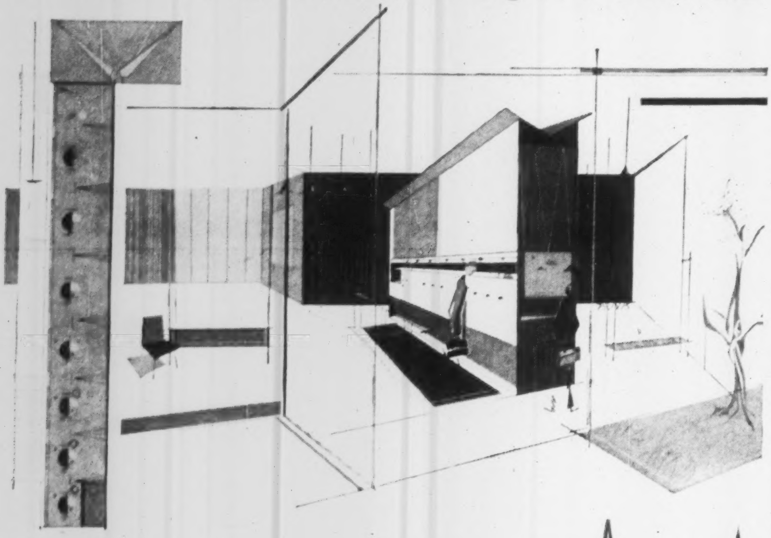
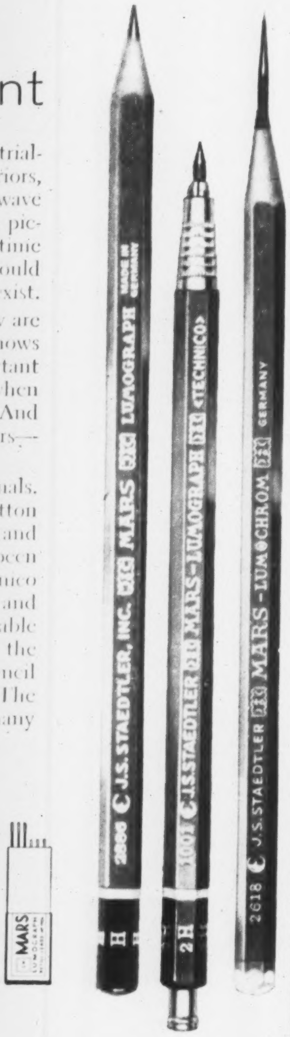


chef-less restaurant

This concept of Sue Vanderbilt, Pratt industrial-design graduate now designing GM auto interiors, would assemble a whole meal and cook it by microwave in a few seconds. Customer would merely check picture menu, insert money, push buttons. By the time he reached the far end of the counter the meal would be waiting, piping hot. All components already exist.

Many designs that will make news tomorrow are still in the "bright idea" stage today. No one knows which will flower into reality. But it will be important in the future, as it is now, to use the best of tools when pencil and paper translate a dream into a project. And then, as now, there will be no finer tool than Mars—sketch to working drawing.

Mars has long been the standard of professionals. To the famous line of Mars Technico push button holders and leads, Mars Lumograph pencils, and Tradition Aquarell painting pencils, have recently been added these new products: the Mars Pocket Technico for field use; the efficient Mars lead sharpener and "Draftsman's" Pencil Sharpener with the adjustable point length feature; and — last but not least — the Mars Lumochrom, the new colored *drafting* pencil which offers revolutionary drafting advantages. The fact that it blueprints perfectly is just one of its many important features.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The 2886 Mars Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom colored *drafting* pencil, 24 colors.

J.S. STAEDTLER, INC.
HACKENSACK, NEW JERSEY

at all good, engineering and drawing material suppliers

(Continued from page 60)

▲ **A. W. Kutsche Co.,** 6275 Schaefer St., P. O. Box 4085, Dearborn, Mich. CA **$2,654,000.** HIGH SCHOOL, DEARBORN, MICH. City, Jessie Schneidewind, secy., School Dist., 5757 Neckel Ave., Dearborn, Mich. Bids Feb. 8. CD 1/9.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Mo., Pagedale (St. Louis 14 P. O.)**—SERVICE—BA 4/2—Stix, Baer & Fuller Co., Leo C. Fuller, chn., 601 Washington St., St. Louis, Zone 1, steel, concrete, masonry two-level, 420,000 sq. ft. service bldg. for warehousing, delivery facilities, administrative offices, and personnel facilities on 13 acre tract at Kingsland Ave. and Terminal R. R, tracks. $2,000,000. Abbott, Merkt & Co., 10 E. 40 St., New York, N. Y., engrs.-archts. CD 2/10.

HEAVY CONSTRUCTION—LB & CA

J. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Kan. CA **$585,165,** est. $495,165. concrete deck and installation handrails constr. deck from Fifth St. and Broadway to north end of Bridge, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Bids Jan. 24, awarded Feb. 3. CD 1/30, under LB.

▲† **Western Contracting Corp.,** 400 Benson Bldg., Sioux City, Iowa. CA **$5,618,750.** earthwork Stage V Oahe Reservoir Proj., near Pierre, Inv. 25-066-56-75, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 2/6, under LB.

E. H. Reeder, 2128 Hawes St., Dallas, Tex., CA **$308,458.** Sects. A and B, 83,000 lin. ft. water main between Wylie and Royce City, DALLAS, TEX. North Texas Municipal Water Dist., H. R. Bisby, Wylie, Tex. Bids Feb. 7. CD 2/15, under LB.

Lone Star Gas Co., 301 S. Harwood St., Dallas, Tex. Own Forces. **$479,900,** gas lines, services replacements, DALLAS, TEX. CD 1/10.

BUILDINGS—LB & CA

Kittell-Lacy, Inc., 915 S. Santa Fe St., Los Angeles, Calif. CA Est. **$636,721.** constr. 3 BUILDINGS at aircraft plant for testing fighter planes, ROBERTSON (ST. LOUIS 21 P. O.), MO. McDonnell Aircraft Corp., Lambert-St. Louis Municipal Airport, Robertson 21, Mo. CD 3/7/55.

▲ **General Electric Supply Co.,** 914 N. 18 St., Omaha, Neb., LB **$3,948,939,** furnishing, installing turbine generating unit transformers, circuit breakers, control board, electric equip. for GENERATING PLANT, LEXINGTON, NEB. Central Nebraska Public Power & Irrigation Dist., Hastings, Neb. Bids Dec. 20, CD 11/25. Project can be cancelled before Mar. 9 because contracts with Consumers Pub. Power Dist. have not yet been fully agreed on.
Combustion Eng., Inc., 200 Madison Ave., New York, N. Y., LB **$2,736,942,** furnishing, installing steam boiler (Lexington, Neb.).

▲ **Melburn Corp.,** c/o C. H. Murray, 7603 Belgard St., Houston, Tex. Own Forces. **$350,000,** 35 DWELLINGS; **$390,000,** 41 DWELLINGS; **$345,000,** 28 DWELLINGS, HOUSTON, TEX. Grand total $1,089,000. CD 1/13.

Knutson Constr. Co., 3803 S. Main St., Houston, Tex. CA **$560,000.** industrial PLANT, HOUSTON, TEX. Weco Well Equipment Mfg. Corp., 2023 Semmes St., Houston, Tex. Bids Jan. 18. CD 1/31, under LB.

▲ **Danna Constr. Co.,** 4922 Greenville Ave., Dallas, Tex. Own Forces. **$351,000,** 18 DWELLINGS; **$372,000,** 22 DWELLINGS; **$347,500,** 16 DWELLINGS, RICHARDSON, TEX. Grand total $1,070,500. CD 1/25.

Robert E. NeSmith, Inc., 6738 Long Dr., Houston, Tex. CA **$700,000.** BOTTLING PLANT, WACO, TEX. Pepsi Cola Bottling Co., 920 Austin St., Waco, Tex. CD 2/16.

FAR WEST

BUILDINGS—BA

Calif., Oakland—OFFICE—BA 3/20—State Div. Architecture, 1120 N St., Sacramento, 2 story, rein.-con. State Dpt. Motor Vehicles Office, $350,000.

HEAVY CONSTRUCTION—LB & CA

▲† **Guy F. Atkinson Co.,** 10 W. Orange Ave., South San Francisco, Calif., LB **$1,362,377,** est. $1,544,887 (8 bidders) first-step cofferdam for Ice Harbor Dam, Snake River, Walla Walla Co., Inv. 56-40, WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 16. CD 1/6.

CANADA

BUILDINGS—BA

▲ **Newfoundland, St. John's**—HOME—BA 3/10—Roman Catholic Episcopal Corp., St. John's, general construction for 164-bed, 4 story, rein. con., steel frame home for the aged and chapel. $1,500,000. John E. Hoskins, 91 Waterford Bridge Rd., archt.

HEAVY CONSTRUCTION—LB & CA

Pressure Pipe Co. of Canada Ltd., 6905 Clanranald Ave., Montreal, Que., CA **$133,730,** supplying on 16 of 5,400 lin. ft. 36 in. water pipe and fittings, OAKVILLE, ONT. Oakville Public Utilities Comn., 52 Randall St., Oakville, Ont. Philips & Roberts, 63 John St. S., Hamilton, Ont., engrs. Awarded Feb. 9.

BUILDINGS—LB & CA

Christensen & Macdonald, 612 Tegler Bldg., Edmonton, Alta., CA **$964,466,** KITCHEN and CAFETERIA, for hospital, EDMONTON, ALTA. Royal Alexandra Hospital Bd., Edmonton, Alta. Bids Jan. 16, awarded Feb. 8. CD 1/25, under LB.

Electric Reduction Co. of Canada Ltd., 137 Wellington St. W., Toronto, Ont. Owner Builds Over **$1,000,000**. PLANT, HAMILTON, ONT. George Crane, c/o owner, engr.

▲ **Merrill Island Mining Corp., Ltd.**, 507 Place d'Armes Montreal, Que., Owner Builds. **$4,500,000**. MINE DEVELOPMENT, CHIBOUGAMAU, QUE. J. E. Jerome, Powell Mine, Noranda, engr.

▲ **A. Janin & Co. Ltd.**, 1460 Sherbrooke St. W., Montreal, Que., CA **$1,100,000** (7 bidders) 63-suite, 12 story, 2 bsmnt. levels, 86x140 ft., rein. con., block, brick APARTMENT, MONTREAL, QUE. Redpath Apartments, c/o Greenspoon, Freedlander & Dunne, archts., 4151 Sherbrooke St. W., Montreal, Que. Bids Feb. 1, awarded Feb. 10. CD 1/23.

▲ **Glenbrook Homes, Inc.**, 460 St. Catherine St. W., Montreal, Que., Owner Builds, **$4,000,000**, HOUSING DEVELOPMENT, suburban Cote St. Luc, MONTREAL, QUE. George Subin, 4326 Sherbrooke St. W., Montreal, Que., archt.

Cecil Carpenter & Co. Ltd., 5139 Decarie Blvd., Montreal, Que., LB **$990,800** (17 bidders) CITY HALL and CIVIC CENTER, ST. LAURENT, QUE. City of St. Laurent, 1390 de l'Eglise St., Montreal, Que. Bids Feb. 10. CD 1/31.

ALASKA

BUILDINGS—BA

Alaska, Seward—HOSPITAL—BA 3/28—Alaska P. Wks., Dpt. Interior, P. O. Box 1181, Juneau, 1 story, part bsmnt.; 18,700 sq. ft. rein.-con. Hospital. $725,000. Plans deposit $25. CD 2/9.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲ Bids will be taken on the following project under International competitive bidding of NATO.

ITALY

Ministero Difesa Aeronautica, Direzione Generale Demanio, Ufficio Studi, Prima Sezione, Viale Castro Pretorio, Rome, underground excavation in rock to form artificial caves for petroleum storage. Eligible American firms should submit their applications to bid before March 1. Invitation to bid will be sent about March 10. Contract award will probably be made on Apr. 10. For information on bidding NATO projects see 6/25/54 Construction Daily.

LATIN AMERICA

▲ **Tecon Corp.**, 1201 Main St., Dallas, Tex., U.S.A., CA **$4,863,110**. subterranean excavation, etc. for completion Hanabanilla Proj. a hydro-electric dam and power plant development at Hanabanilla River, CUBA. Primera Central Hidreoelectrica Cubana (PRICHC) Edificio de la Lonja del Comercio, Sexto Piso, Havanna, Cuba. CD 8/9.

HEAVY CONSTRUCTION—BA

Iraq—BA 4/8—Development Bd. & Ministry of Development, Govt. of Iraq, Baghdad, six boiler units at Baghdad and Dibis Stations, Contr. 2. Plans available at Iraq Embassy, Wash., D. C., U. S. A., adv. ENR 3/1.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mich., Midland**—City, Kenneth W. Lybot, clk., **$3,000,000** bond election Mar. 20, water system expansion, incl. raw water reservoir, filtered water storage, mains, etc.

▲ **Neb., Omaha**—Metropolitan Utilities Dist., 18 and Harney Sts., wells at and near Platte River, pump water and pipe to Omaha, approx. 25 mi. pipe line, near here. Burns & McDonnell Eng. Co., 55 and Troost Sts., Kansas City, Mo., consult. engrs. J. C. Detweiler, c/o owner, engr.

SEWERS, WASTE DISPOSAL

▲ **Mo., St. Louis County**—Metropolitan St. Louis Sewer Dist., William Q. Kahr, exec. dir., 508 Olive St., St. Louis, Zone 1, voted **$1,700,000** bonds Feb. 7, 6 mile trunk sewer and sanitary sewers ranging from 18 in. to 5 ft. in Maline Creek area of northwestern part of St. Louis County; incl. a parallel sewer along north side of creek. CD 12/16.

▲ **Ont., St. Catharines**—Grantham Twp., 145 King St., sanitary sewerage sys. **$2,000,000**. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, consult. engrs. CD 1/11.

BRIDGES

▲ **Calif., Riverside**—City, City Hall, voted $750,000 bonds Feb. 7, underpass on U. S. Hy. 60, Total est. $3,000,000.

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Hartford,

Hartford—network of interchanges and connecting links for New Founders bridge here, **$10,500,000**. E. Lionel Pavlo, 7 E. 47 St., New York, N. Y.; John Mozzochi, 1533 Hebron Ave., Glastonbury, Conn.,

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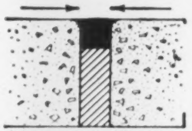
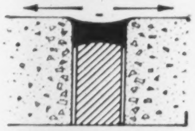

Joint compressed in warm weather temperatures.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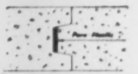
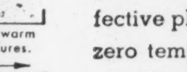
For sealing keyed construction or contraction joints in vertical walls. Maintains bond with concrete at temperatures to sub-zero. Simple installation insures a moisture-tight seal of the joint.


Keyed construction joints in vertical walls and horizontal slabs.

Molded Para-Plastic sealing at a footing.

Para-Lateral Strip



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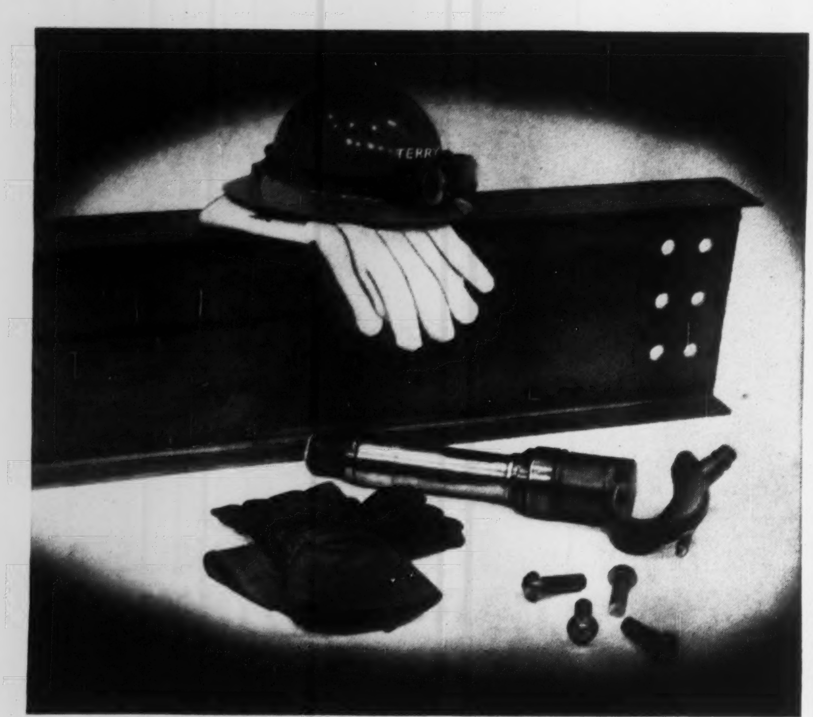

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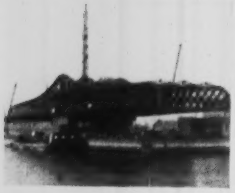

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Charles A. Maguire & Assocs., 76 Westminster St., Providence, R. I. and Yule, Sticklen, Jordan & McNee, 23 and Market Sts., Camp Hill, Pa., engrs. CD 1/29/54.

▲ **Ill., Rockford**—City, City Hall, bridge: **$2,800,000**. Ammann & Whitney, 724 E. Mason St., Milwaukee, Zone 2, Wis., consult. engrs. CD 2/10/43.

STREETS AND ROADS

▲ **Calif., Long Beach**—City, City Hall, voted bonds Feb. 9, Long Beach Freeway Terminus, **$3,000,000**. CD 12/16.

EARTHWORK, WATERWAYS

▲† **California**—Bureau Reclamation, Dpt. Interior, 2929 Fulton Ave., Sacramento, recreational developments in Folsom Lake Areas, incl. 2,500 acres, Sacramento, Placer and El Dordo Counties. **$3,313,000.**

▲ † **Washington**—Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo. irrigation of 10,000 acres in Spokane Valley using water from underground stream, Spokane Co. **$4,000,000.**

AIRPORTS

▲ **Calif., Long Beach**—AIRPORT—City, City Hall, voted **$5,200,000** bonds Feb. 9, expanding municipal airport. CD 12/16.

LATIN AMERICA

▲ **Chile**—MINING—Andes Copper Mining Co., c/o Anaconda Copper Co., 25 Broadway, New York, N. Y., U.S.A., plans developing mine at Indio Muerto with 5 mi. tunnel, electric railway, primary crushing plant, hydro-power plants, 15 mi. railroad between the mine and mill. **$53,000,000.**

▲ **Mexico, Monterrey**—UNIVERSITY CITY—State Govt., Palacio del Estado, Monterrey, plans by Pedro Ramirez Vazquez, Georgia, 145, Mexico City, university city **$3,200,000.**

▲ **Mexico, Villa Union**—Sria. de Recursos Hidraulicos, P. de Reforma, 67, Mexico City, plans irrigation dam, **$1,920,000.**

AMERICANS ABROAD

▲† **India, New Delhi**—OFFICE, etc.—State Dpt., Foreign Building Operations, 21st St. and Virginia Ave. N.W. Wash. 25, D. C., U.S.A., plans by Edward Durell Stone, 50 E. 64 St., New York 21, N. Y., U.S.A., office bldg., staff housing, **$2,000,000.**

PUBLIC BUILDINGS

▲ **Ala., Montgomery**—STATE—Alabama State Bldg. Comn., State Capitol, Montgomery, plans by Charles McCauley, Jackson Bldg., Birmingham, and T. Cooper Van Antwerp, 354 St. Francis St., Mobile, state bldg., **$3,250,000.**

▲ **Calif., Centerville**—HOSPITAL—Washington Twp. Hospital, Bd. Directors, Washington Twp., Centerville, voted bonds hospital addn. **$1,500,000.** Stone, Mulloy, Marraccini & Patterson, AIA, 619 California St., San Francisco, consult. engrs. CD 1/10.

▲ **Calif., Long Beach**—HOSPITAL—City, City Hall, voted bonds Feb. 9, hospital expansion, **$10,500,000.** CD 12/16.

▲ **Calif., Long Beach**—PUBLIC SAFETY—City, City Hall, voted bonds Feb. 9, public safety bldg. **$4,660,000.** CD 12/16.

▲ **Calif., Los Altos**—SCHOOL—Los Altos Elementary School Dist., Box 188, Los Angeles, voted bonds, school and school addns. **$2,384,000.** CD 10/28.

▲ **Calif., Ventura**—SCHOOLS—Ventura Union High School Dist., Ventura, **$9,500,000.** bond election Apr. 10, 5 school projects. CD 2/8/52.

▲ **Conn., East Hartford**—SCHOOL—Town, School Bldg. Com., Town Hall, South End High School. **$3,000,000.** CD 1/5/55.

▲ **Conn., Hamden**—SCHOOL—Town, Bd. Educ., 2040 Dixwell Ave., Junior High School, Washington Ave. **$2,500,000.** CD 2/8.

▲ **Conn., Meriden**—SCHOOL—Town, Bd. Educ., plans by Willard Wilkins, 945 Asylum Ave., Hartford, brick high school, Coe Ave, **$2,600,000.** Robert W. Loomis, 32 Maple Ave., Windsor, consult. engr. Henri B. Van Zelm, 1007 Farmington Ave., West Hartford, engr. CD 6/2.

▲† **D. C., Wash.**—HOUSE OF REPRESENTATIVES—U. S. Govt., Office of Architect of the Capitol, U. S. Capitol, plans by Harbeson, Hough, Livingston & Larson, consult. archts., Architects Bldg., Phila., Pa., for new construction House of Representatives Bldg.; plans by Roscoe Dewitt, 2025 Cedar Springs St., Dallas Tex., remodeling old building; plans by Alfred Easton Poor, 787 Fifth Ave., New York, N. Y., remodeling new building. **$35,000,000** (not appropriated) Above architects are working with Capitol Architect on project. CD 10/26/45.

▲ **Ind., Valparaiso**—CHAPEL, etc.—Valparaiso University, Valparaiso, plans by Wm. M. Cooley, 532 Busse Hy., Park Ridge, Ill., chapel on campus, **$800,000;** plans by Edward F. Jansson, 740 N. Rush St., Chicago, Ill., dormitory, **$1,500,000.** CD 11/9.

▲ **Ind., West Lafayette**—RESIDENCE HALLS—Bd. Trustees Purdue University, West Lafayette, plans by Walter Scholer & Assocs., 114 State St., Lafayette, 3 story, masonry, rein.-con., structural steel residence halls, **$4,500,000.**

▲ **Mich., Detroit**—SCHOOL—City, Bd. Educ., 1354 Broadway, Chrysler Intermediate School, **$3,000,000;**

Capon School addn., 1471 Maple St., $350,000; Leland School addn., 1385 Madison St., $400,000.

▲ **Minn., Albert Lea**—SCHOOL—Bd. Educ., Mrs. Leslie Hellie, clk., voted **$4,360,024** bonds Feb. 13, Junior High School, 3 elementary schools, Central High School gymnasium. B. J. Hein, Albert Lea and Hammel & Green, 1932½ University Ave., St. Paul, archts. CD 2/1.

▲ **Mo., Hazelwood (St. Louis 21 P.O.)**—SCHOOL—School Dist. of Hazelwood R-1, St. Louis Co., Bd. Educ., Clifford Kirby, supt. Schools, 1865 Hy. No. 66, Zone 21, voted **$1,200,000** bonds Feb. 4, high school exten. and new elementary school. CD 2/7.

▲ **Mo., Kirkwood (St. Louis 22 P.O.)**—SCHOOLS—Kirkwood School Dist. R-7, Bd. Educ., Alva L. Crew, supt. Schools, 516 S. Kirkwood, Zone 22, voted **$2,650,000** bonds Feb. 14, schools, school addns. CD 12/30.

▲ **Mont., Butte**—HOSPITAL—Silver Box Co., Court House, **$2,000,000** bond election Nov. 6, 4 story county hospital. CD 7/30/45.

▲ **Neb., Omaha**—HIGH SCHOOL—Bd. Educ., 3902 Davenport St., plans by L. A. Daly Co., Insurance Bldg., North Junior High School. **$2,200,000.** CD 10/5.

▲ **Neb., Omaha**—HIGH SCHOOL—Bd. Educ., 3902 Davenport St. Southwest Junior High School, 42nd and Bancroft Sts. **$2,800,000.** CD 3/28/52.

▲ **Okla., Oklahoma City**—DORMITORY—Oklahoma City University, 2501 N. Blackwelder St., plans by Sorey, Hill & Sorey, 809 N.W. 36 St., dormitory. **$1,000,000.**

▲ **Ore., Salem**—HIGH SCHOOLS—Salem School Dist., 1309 Ferry St., voted bonds, two Junior High Schools. **$2,400,000.** William I. Williams, 467 Marion St., archt.

▲† **Va., Langley**—HEADQUARTERS—General Services Admin., General Services Bldg., Wash. 25, D. C., headquarters bldg. for Central Intelligence Agency. **$38,000,000.**

▲ **W. Va., Morgantown**—HOSPITAL, etc.—West Virginia University Bd. Governors, Administration Bldg., Morgantown, plans by C. E. Silling & Assoc., 314 Masonic Bldg., Charleston, 10 story, brick, block hospital and clinic bldg. **$14,000,000.** Schmidt, Garden & Erickson, 104 S. Michigan St., Chicago, Ill., consult. archts. Bids probably this spring. CD 6/24.

▲ **Wis., Madison**—ADULT EDUCATION CENTER—University of Wisconsin Foundation, 905 University Ave. plans by Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, 3 story, bsmnt. adult education center. **$2,000,000.**

▲ **Man., Winnipeg**—PLANT—Manitoba Hydro-Electric Bd., Notre Dame Ave., steam-powered electric plant, **$50,000,000.**

▲ **Ont., Ottawa**—CITY HALL—City, plans by Rother, Bland & Trudeau, 115 Sherbrooke St. W., Montreal, Que., 7 story 258x325 ft., stone, glass city hall, Green Island, Rideau River, and car parking area. **$2,500,000.** CD 6/9.

COMMERCIAL BUILDINGS

▲ **Colo., Loveland**—RESORT HOTEL—John D. and Clint Murchison, Jr., 1201 Main St., Dallas, Tex., resort hotel, **$2,000,000.**

▲ **Fla., Bal Harbour Village**—HOTEL—Harry Dinnerstein, 6401 N. Bay Rd., Miami Beach, plans by Melvin Grossman, 311 Lincoln Rd., Miami Beach, 10 story, rein.-con., structural steel, Beau Rivage Hotel, Collins Ave. and 99 st. **$10,000,000.**

▲ **Ga., Atlanta**—SHOPPING CENTER—Adams-Cates Realty Co., Hurt Bldg., plans by Robert & Co., 96 Poplar St. N.W., shopping center, in Buckhead suburb. **$12,000,000.**

▲ **Ill., Chicago**—OFFICE—Morton Salt Co., 120 S. La Salle St., plans by Graham, Anderson, Probst & White, 80 E. Jackson Blvd., Zone 4, 4 story office, Wacker Dr., between Randolph and Washington Sts. **$4,000,000.**

▲ **Ind., Gary**—SCHOOL—Fort Wayne Diocese, 1103 S. Calhoun St., Ft. Wayne, Catholic high school. **$2,000,000.**

▲ **Mass., Chelsea**—SHOPPING DEVELOPMENT—U. S. Realty Exchange, c/o Robert Green, 51 Garland St., Everett, plans by Salsberg & LeBlanc, 318 Harvard Ave., Brookline, shopping development Mill Creek area, **$4,000,000.**

▲ **Mo., St. Louis**—OFFICE—Merchants Exchange of St. Louis, Harold C. Banks, pres., 111 N. 3 St., Zone 2, will not construct 23 story bsmnt., steel, rein.-con., office incl. 2-level garage to replace present exchange bldg. west side 3 St. between Chestnut and Pine Sts. **$10,000,000.** Project abandoned. CD 3/9/54.

▲ **N. J., Eatontown**—SHOPPING CENTER—Monmouth Shopping Center, c/o Kahn & Jacobs, archts., 2 Park Ave., New York 16, N. Y., regional shopping center, 75-acre tract on Route 35 near Eatontown Circle. **$10,000,000.**

▲ **N. Y., Huntington**—SHOPPING CENTER—Peter Doelger, Inc., 407 E. 55 St., New York, Zone 22, plans by Fordyce & Hamby, Assoc., engrs.-archts., 70 W. 40 St., New York, Zone 36, Walt Whitman Shopping Center, on 45 acre tract on Rte. 110 between Jericho Turnpike and Northern State Parkway. **$5,000,000.** CD 4/15/54.

▲ **N. Y., Poughkeepsie**—HOUSING—South Gate Estate, c/o Jos. Gellert 54 Main St., housing on Rte. 9, **$8,500,000.**

▲ **Pa., Phila.**—BANK and OFFICE—Land Title Building Corp., c/o Albert M. Greenfield & Co., 1325 Walnut St., plans by Thalheimer & Weitz, 1325 Walnut St., bank and office modernization. **$4,500,000.**

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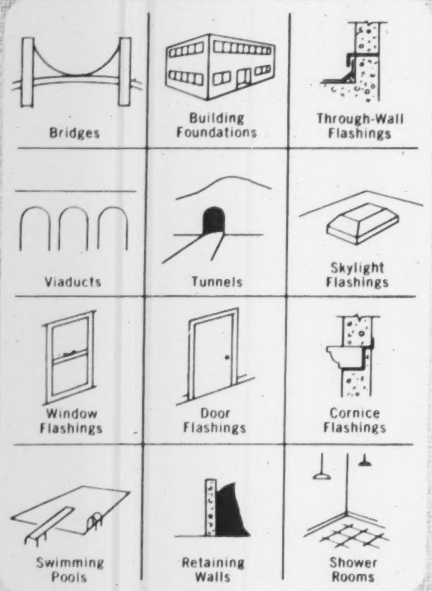

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▲ **Pa., Pittsburgh**—LIBRARY—University of Pittsburgh, Cathedral of Learning, Fifth and Bigelow Blvd., plans by Trautwein & Howard, 1411 Howard St., Phila., library. **$2,500,000.** CD 7/1/48.

▲ **Tex., Dellas**—OFFICE—Braniff International Airways, c/o Charles E. Beard, Love Field, Dallas, plans by Lane, Gamble & Assocs., 6810 Harry Hines Blvd., 10 story office, Exchange Park on Harry Hines Blvd. between Inwood Rd. and Mockingbird Lane. **$2,250,000.**

▲ **Tex., Houston**—SHOPPING CENTER—Dan M. Moody Interests, c/o Port City Village Corp., Abstract & Title Bldg., plans by Irving Klein & Assocs., 1317 Austin St., shopping center. **$3,000,000.** CD 2/8.

▲ **Tex., Laredo**—HOUSING—Procurement Office, Laredo Air Force Base, Laredo, plans by Howard R. Meyer, archt. engr., 2907 Maple St., Dallas, construct and finance, 345 unit housing, Laredo Air Force Base. **$2,760,000.** CD 1/31.

▲ **Wash., Everett**—HOMES—O'Connor & Cronin, 9700 Hy. 99, Everett, 262 homes. **$3,000,000.** Construction this year.

▲ **Ont., London Twp.**—DWELLINGS—Orchard Park Development Co., 174 King St., 127 new brick dwellings. **$1,500,000.**

▲ **Ont., Sarnia**—DWELLINGS—Hay Construction Co., W. Lorne Hay, 470 Maxwell St., 160 dwellings, Murphy and Indian Rd. site, **$2,000,000.**

INDUSTRIAL BUILDINGS

▲ **Calif., Antioch**—PLANT—Crown-Zellerbach Corp., 343 Sansome St., San Francisco, 175,000 sq. ft. mfg. plant. **$2,500,000.**

▲ **Calif., Palo Alto**—LABORATORIES—Lockheed Aircraft Corp., 1705 Victory Blvd., Burbank, plans by Kennet T. Thompson, 16750 Sunset Blvd. Pacific Palisades, two 51,000 sq. ft. research laboratories, Stanford University Industrial Park, **$6,000,000.** Ralph M. Parsons, 617 Olive St., Los Angeles, Zone 14, consult. engr. CD 2/2.

▲ **Calif., Sunnyvale**—PLANT—Lockheed Aircraft Corp., 1705 Victory Blvd., Burbank, aircraft plant for Missile Systems Div. **$3,000,000.** Ralph M. Parsons, 617 Olive St., Los Angeles, Zone 14, consult. engr. CD 2/2.

▲ **Ind., Indianapolis**—PLANT—Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., steering gear and small parts plant. **$4,000,000.** Negogiating for site.

▲ **La., Opelousas**—PLANT—Sohio Petroleum Co. and Gulf Oil Corp., Opelousas, cycling plant, 50 M.M. s.c.f.d. **$2,400,000.**

▲ **Mich., Wyandotte**—PLANT—Wyandotte Chemical Corp., Robert B. Semple, pres., Wyandotte, cement plant expansion, granulated blast furnace slag, $500,000 will go for pollution control, Total est. **$2,500,000.**

▲ **Minn., Rochester**—PLANT, etc.—Internationl Business Machines, 590 Madison Ave., New York, Zone 22, 400,000 sq. ft. plant and engineering bldgs. near Rte. 52. **$8,000,000.** Work to begin late 1956.

▲ **N. Y., New York**—PENN. STATION—Pennsylvania R.R. Co., S. R. Hursh, ch. engr., Suburban Station Bldg., 1617 Pennsylvania Blvd., Phila., Pa., plans by Lester C. Tichy, 269 Lexington Ave., New York, remodeling Penn Station, West 31 St. and Eighth Ave., **$2,000,000.**

▲ **O., Evendale**—JET TEST ENGINE FACILITY—General Electric Co., River Rd., Schenectady, N. Y., jet test engine facilities. **$20,000,000.** Chemical Plants Div. Blaw-Knox Co., 930 Fort Duquesne Blvd., Pittsburgh, Pa., consult. engr. CD 2/13.

▲ **Tex., Fort Stockton**—PLANT—Permian Basin Pipeline Natural Gas Plant, Fort Stockton, gas plant addn. **$1,250,000.**

▲ **Tex., Freeport**—PLANT—Dow Chemical Co., Freeport, ethylene oxide plant addn. **$1,500,000.** CD 5/1/52.

▲ **Alta., Foreman**—STEAM POWER PLANT EXPANSION—Canadian Utilities Ltd., 10529 Jasper Ave., Edmonton, steam power plant extension, about 98 mi. southeast of here on Battle River. **$3,000,000.**

▲ **Que., Montreal**—PLANT—La Presse Publishing Co. Ltd., 7 St. James St. W., plans by Jacques M. Morin, 6555 Cote des Neiges Rd., printing plant exten. **$3,000,000.** Surveyor, Nenniger & Chenevert, 1440 St. Catherine St. W., consult. engrs. CD 3/2/46.

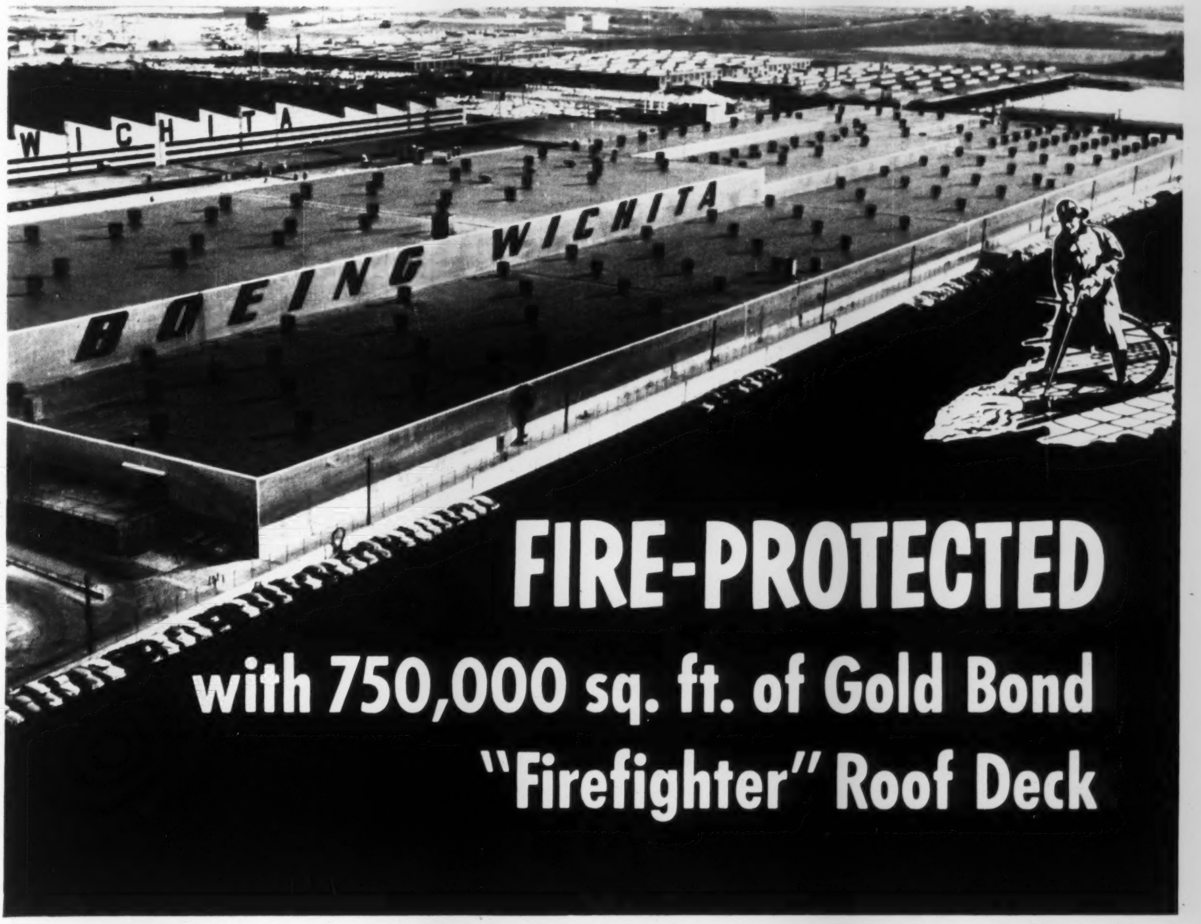
UNCLASSIFIED

▲ **Calif., Long Beach**—PARK—City, City Hall, voted bonds Feb. 9, park and recreation imprvs. **$4,900,000.** CD 12/16.

▲ **Calif., Long Beach**—TRANSIT SHED, etc.—Long Beach Harbor Dpt., 1333 El Embarkadero, Long Beach, transit shed rehabilitation, Pier A, Berths 3 and 4, **$1,250,000;**
grading, development, Pier C, **$1,500,000;**
transit shed rehabilitation, Pier A, Berths 1 and 2, **$700,000.**
Pier C and Berth 27 back area development, **$650,000;**
Pier D, back area utilities and develoment, **$250,000.**
Pier D, Berths 27 and 31A, cathodic protection, **$85,000.**
Pier B, Berths 12 to 19, pier reconstr., **$900,000.**
Pier B, back area grading, reconstr., **$575,000.**
Pier A, Berths 1 and 2, wharf rehabilitation, **$1,420,000.**
Pier A, Berths 208 and 211, cathodic protection, **$87,000.** R. R. Shoemaker, c/o owner, engr.

Conn., Hartford—ICE RINK—City, 550 Main St., artificial ice rink, Colts Park, **$160,000.**

▲ **North Carolina**—RURAL DISTRIBUTION LINES—Blue Ridge Electric Membership Co-operative, N. Mulberry St., Lenoir, 175 mi. rural distr. lines, headquarters facilities. **$1,040,000.** CD 2/14/51.



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HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 7 Maine
STREETS AND ROADS
March 7 Rhode Island March 9 Vermont

BUILDINGS—BA

▲ **Conn., Norwalk**—SCHOOL—BA 3/13—City, Supt. Schools, East Ave., Norwalk, Junior High School, Ponus Ave. $1,222,000. Plans deposit $50. Lyons & Mather, 211 State St., Bridgeport, archts. CD 7/26.

▲ **Mass., East Bridgewater**—SCHOOL—BA 3/13—Town, High School Bldg. Comn., c/o Supt. Schools, 4 North Bedford St., high school, Plymouth St. $1,500,000. Plans deposit $50, refundable, Extended date, Perry, Shaw, Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, archts. CD 2/2.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,

American Bridge Div., U. S. Steel Co., 525 William Penn Pl., Pittsburgh, Pa., LB **$7,607,494**. Proj. 310-02, complete superstructure, incl. bents and drainage for 3 viaducts, Connecticut Turnpike, Bridgeport. Bids Feb. 20. CD 1/26.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,

Conn.—**Harris Structural Steel Co.**, 419 Fourth Ave., New York, N. Y., LB **$2,713,350**, est. $4,000,000. Proj. 312-02, superstructure Yellow Mill Pond bridge, Bridgeport;

Conn.—**Bethlehem Steel Co.**, 25 Broadway, New York, N. Y., LB **$7,887,754**, est. $6,000,000. Proj. 317-05, main portion of bridge over Quinnipac River, New Haven. Bids Feb. 20. C 1/31.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,

Lane Constr. Co., 965 E. Main St., Meriden, Conn., LB **$10,049,942**, est. $10,000,000. Proj. 321-01, b. conc. 59,300 lin. ft., incl. 15 grade separation structures, 3 stream crossing bridges, 4 rein.-con. box culverts on Conn. Turnpike, Guilford, Clinton, Madison and Westbrook. Bids Feb. 20;

cancelled bids to have been opened Feb. 20, Proj. 312-01, c. conc. 13.806 lin. ft., incl. grade separation structures at Pembroke St., Seaview, Newfield, Central, Union and Hollister Aves. in Bridgeport and Surf Ave., Stagg and Mead Sts., Honeysport Rd. and South Ave. in Stratford, incl. are substructures of Yellow Mill Pond Bridge, Stratford Ave. Overpass and Beardsley St. Overpass, est. **$5,000,000**. CD 2/1

BUILDINGS—LB & CA

▲ **Beacon Constr. Co.**, 102 Hano St., Allston, Mass. CA **$3,211,883**, est. $2,500,000-$3,000,000. construct and finance family HOUSING 200 units, Fort Devens, ENG-19-016-56-69, AYER, MASS U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 12/27, under Public Buildings.

▲ **Wadhams & May Co.**, 15 Lewis St., Hartford, Conn., CA, **$3,116,109**, Conrad High SCHOOL, WEST HARTFORD, CONN. Bd. Educ., 51 Memorial Rd., West Hartford, Conn. Bids Feb. 7, awarded Feb. 17. CD 2/9, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 6 Maryland March 16 Pennsylvania
STREETS AND ROADS
March 7 Delaware March 16 Pennsylvania

▲† **New York**—AAA FACILITIES—BA On Or About 3/22—U. S. Eng., 111 E. 16 St., New York, Zone 3, AAA facilities, Spring Valley, $1,000,000-$3,000,000, Raymond & Rado, 101 Park Ave., New York, Zone 17, archts. CD 7/19.

BUILDINGS—BA

▲ **N. Y., Tonawanda**—SCHOOL—BA 3/15—School Bd., 80 Clinton St., Thomas Jefferson Elementary School, Athens and Ochs Blvd. $1,220,000. CD 3/15/55.

▲ **N. Y., Brooklyn**—HOUSING—BA 3/20—New York City Housing Auth., 299 Broadway, New York, Zone 7, (1) foundations and appurtenances (2) general constr. (3) foundations and general constr. (4) heating and ventilating (5) electric work, (6) plumbing for Sumner Houses (Proj. No. NYS-58-4) Sect. II, incl. Bldgs. Nos. 8 to 13 (inclusive) located in area bounded generally by Park Ave., Sumner Ave., Myrtle Ave., and Troop Ave. in Brooklyn Boro. Plans deposit $75; furnishing and installation of elevators, Plans deposit $25. CD 2/7/52.

BUILDINGS—SLC

▲ **Md., Owings Mills**—PLANT, etc.—Maryland Cup Co., 1200 S. Eutaw St., Baltimore, soon lets contract, mfg. plant and warehouse. $1,500,000, S. L. Milton, 755 Boylston St., Boston, Mass., engr.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**Yonkers Contracting Company, Inc.**, 959 Midland Ave., Yonkers, LB **$2,759,707**. Est. $3,278,000. (6 bidders). constr. 4.91 mi. portion of Erie Section of State Thruway and 1.45 mi. of access roads, from Four Mile Level Rd. just east of Irving, northeastward to Cain Rd. (Rte. 323), Erie Co.

N. Y.—**Johnson, Drake & Piper, Inc.**, 86 Trinity Pl., New York 6, N. Y. LB **$2,635,833**. Est. $3,369,000. (11 bidders). grading, structure work in preparation for future paving of 3.4 mi. six-lane divided section of Palisades Interstate Parkway from Rte. 59 east of Nanuet, southward to Convent Rd. and grading, paving 2.18 mi. of access roads, Rockland Co.

▲ **Merritt-Chapman & Scott Corp.**, Standard Bldg., Cleveland, O. LB **$1,719,870**. Oswego Water Supply Proj., OSWEGO, N. Y. City, Oswego, N. Y. Nussbaumer, Clarke & Velzy, 500 Fifth Ave., New York, N. Y., archts., Bids Feb. 7;

Herbert F. Darling, Williamsville, N. Y. LB **$1,753,415**. alternate (Oswego, N. Y.).

BUILDINGS—LB & CA

▲ **The Arthur Venneri Co.**, 300 North Ave. E., Westfield, N. J. CA **$6,243,282**. general constr. 763 HOUSING units, Talbert Mall, Ellicott Dist., BUFFALO, N. Y. Buffalo Municipal Housing Auth., 901 City Hall, Buffalo 2, N. Y. and total $7,558,188. CD 2/2, under LB;

Quackenbush Co., Inc., 505 Franklin St., Buffalo 2, N. Y. CA **$527,847**. heating and ventilating work (Buffalo, N. Y.);

John H. Knox Co., Inc., 1736 Fillmore Ave., Buffalo 11, N. Y. CA **$787,059**. plumbing work Buffalo, N. Y.).

▲ **Lou Funk**, c/o A. H. Salkowitz, archt., 87-25 Homelawn St., Jamaica 32, N. Y. Owner Builds. **$1,500,000**. 52 HOUSES on tract bounded by Woodbury Rd., Jericho Turnpike and Nassau Co. line, COLD SPRING HARBOR, N. Y.

▲ **Lou Funk**, c/o A. H. Salkowitz, archt., 87-25 Homelawn St., Jamaica 32, N. Y. Owner Builds. **$4,000,000**. 265 HOUSES on tract bounded by Kings Park Rd. Jericho Turnpike and Cornell Dr., COMMACK, N. Y.

▲ **Cauldwell-Wingate Co.**, 101 Park Ave., New York 17, N. Y. LB **$8,662,000**. (9 bidders) general constr. DISTURBED PATIENTS' BUILDINGS Nos. 21 and 22, Kings Park State Hospital, KINGS PARK, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Feb. 16. CD 12/1/54;

Raisler Corp., 129 Amsterdam Ave., New York 23, N. Y. LB **$718,780**. (7 bidders) heating work (Kings Park, N. Y.);

C. K. Rehner, Inc., 49-20 Skillman Ave., Woodside, N. Y. LB **$673,186**. (4 bidders) plumbing work (Kings Park, N. Y.).

Arc Electrical Constr. Co., Inc., 739 Second Ave., New York 16, N. Y. LB **$744,400**. (8 bidders) electrical work (Kings Park, N. Y.).

▲ **Maplecrest Homes**, c/o Alwin Cassens Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$2,000,000**. 100 HOUSES on 23 acre tract on Bellmore Ave. near Southern State Parkway, NORTH BELLMORE, N. Y.

▲ **Chaney Building Co.**, 3640 Brigantine Blvd., Brigantine, N. J., Separate Contracts, **$2,250,000**. RESIDENTIAL DEVELOPMENT, BRIGANTINE, N. J.

▲ **Stuart Associates, Inc.**, Att. Aaron Follade, 26 Court St., Brooklyn, N. Y., Separate Contracts, **$4,000,000** 400-unit RESIDENTAL DEVELOPMENT, BURLINGTON, N. J.

▲ **Acreage Development Corp.**, c/o Ted Brand, Northvale, N. J. Separate Contracts. **$10,400,000**. 650-unit RESIDENTIAL DEVELOPMENT, CAMDEN, N. J. Robert Easton, Haworth, archt.

▲ **Pine Acres, Inc.**, 230 First St., Lakewood, N. J., Separate Contracts, **$7,000,000**. RESIDENTIAL DEVELOPMENT, New Hampshire Ave., LAKEWOOD, N. J.

▲ **Edward Constr. Corp.**, 630 Mountain Dr. South Orange, N. J., Separate Contracts. **$3,500,000**. RESIDENTIAL DEVELOPMENT, in vicinity of TRENTON, N. J.

▲ **Ventnor Gardens, Inc.**, 1217 Atlantic Ave., Atlantic City, N. J., Separate Contracts. **$3,250,000**. RESIDENTIAL DEVELOPMENT, Ventnor Gardens Section, VENTNOR, N. J.

▲ **Wallace & Berlin**, 69 and Walnut Sts., Upper Darby, Pa. Separate Contracts. **$1,650,000**. RESIDENTIAL DEVELOPMENT, 150 units, Meadowbrook Park, CHESTER, PA.

▲ **High Point Acres**, 355 W. State St., Media, Pa. Separate Contracts. **$2,832,000**. RESIDENTIAL DEVELOPMENT, 177 units, High Point Acres, LIMA, PA. Jack Swerman, 405 Market St., Chester, Pa., archt.

▲ **Becker & Lipschutz**, 4411 N. Broad St., Phila., Pa. Separate Contracts. **$2,160,000**. RESIDENTIAL DEVELOPMENT, Rte. 202 Brittany Farms, NEW BRITAIN, PA.

▲ **Lened Homes**, 7201 Brous Ave., Phila., Pa. Separate Contracts. **$5,500,000**. RESIDENTIAL DEVELOPMENT, New Hope Rd., NORRISTOWN, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **Dinerman & Son, Inc.**, 1525 Park Blvd., Camden, N. J. Separate Contracts. **$1,600,000**. RESIDENTIAL DEVELOPMENT, Cinnaminson Twp., PALMYRA, PA

▲ **Ralph Bodek**, 160 Lond Lane, Upper Darby, Pa. CA **$1,500,000**. 2 APARTMENTS, 500 homes, swimming pool, Ford Rd. and Monument Ave., PHILA., PA. First Lewis Corp., c/o Lewis Silverman, 1420 Walnut St., Phila., Pa. Samuel Oshiver, 1704 Walnut St., Phila., Pa., archt.

▲ **Southwest Temple Corp.**, 6918 Bustleton Ave., Phila., Pa. Separate Contracts. **$2,376,000**. 20th Ward HOUSING, 11 St., PHILA., PA. Anthony F. Orefice, 843 N. 19 St., Phila., Pa., archts. Engineering Consultants, 843 N. 19 St., Phila., Pa., engrs.

▲ **Magness Constr. Co.**, 405 Phila. Pike, Wilmington, Del. Separate Contracts, **$2,500,000**. 200-unit RESIDENTIAL DEVELOPMENT, Ogletown Rd., NEWARK, DEL.

▲ **Magness Constr. Co.**, 405 Phila. Pike, Wilmington, Del., Separate Contracts, **$750,000**, 50 or more unit RESIDENTIAL DEVELOPMENT, Carrcroft Crest Development; **$3,750,000**. 250-unit residential development, Brandywine Hundred Area, WILMINGTON, DEL

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 7 Virginia

BUILDINGS—LB & CA

▲ **Daniel Constr. Co. Inc.**, 822 7 Ave. S., Birmingham, Ala., CA, **$2,750,000**, 5 story, 2 bsmnt., steel, concrete BANKING HOUSE addn., BIRMINGHAM, ALA. Birmingham Branch, Federal Reserve Bank of Atlanta, 104 Marietta St. N.W., Atlanta, Ga. Awarded Feb. 18. CD 1/27, under LB.

▲ **R. P. Farnsworth & Co., Inc.**, 1515 S. Salcedo St., New Orleans, La. CA Est. **$2,000,000**. 15 story OFFICE, Tulane Ave. and Saratoga St., NEW ORLEANS, LA. Harry & Shepard M. Latter, 919 Gravier St., New Orleans, La. Herbert A. Benson, National Bank of Commerce, New Orleans, La., archt.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 6, 7 Michigan
STREETS AND ROADS
March 6 Michigan

▲ **O., Cincinnati**—BA 3/13—City, City Hall, Contract No. 6, Millcreek Sewage Plant, sludge disposal facilities. $2,000,000. Havens & Emerson, Leader Bldg., Cleveland, engrs. Plans deposit $25. CD 4/1.

BUILDINGS—BA

▲ **Ill., Evanston**—SCHOOL—BA 3/29—Evanston Twp. High School, 1600 Dodge St., high school addn. $2,000,000. Perkins & Will, 309 W. Jackson Blvd., Chicago, Zone 6, archts. CD 11/8/54.

▲ **Wis., Waukesha**—SCHOOL—BA 3/29—Bd. Educ., Waukesha, high school. $3,000,000. Ebling, Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, archts. CD 10/20/54.

▲ **Mich., Pontiac**—HOSPITAL—BA 4/19—City, Ada R Evans, clk., Pontiac, Pontiac General Hospital, $3,000,000. CD 6/16/53, under Commercial Buildings.

BUILDINGS—LB & CA

▲ **The R. C. Mahon Co.**, 6565 E. 8-Mile Rd., Detroit, Mich., CA Total est. **$3,000,000**. structural steel for ASSEMBLY PLANT and Fisher BODY PLANT, WARREN, O. Chevrolet Motor Div., General Motors Corp., 3044 W. Grand Blvd., Detroit, Mich. CD 2/21.

▲ **Kingan & Co. Inc., Div. Hygrade Food Products**, 55 South Blackford St., Indianapolis, Inc., Separate Contracts, **$2,000,000** PORK PLANT addn., INDIANAPOLIS, IND.

▲ **Sherman Olson Co.**, 219 N. Kilpatrick St., Chicago, Ill., CA, **$4,500,000**. OFFICE, Wacker Dr. at Randolph and Washington Sts., CHICAGO, ILL. Morton Salt Co., 120 S. La Salle St., Chicago, Ill. Awarded Feb. 15. CD 2/15.

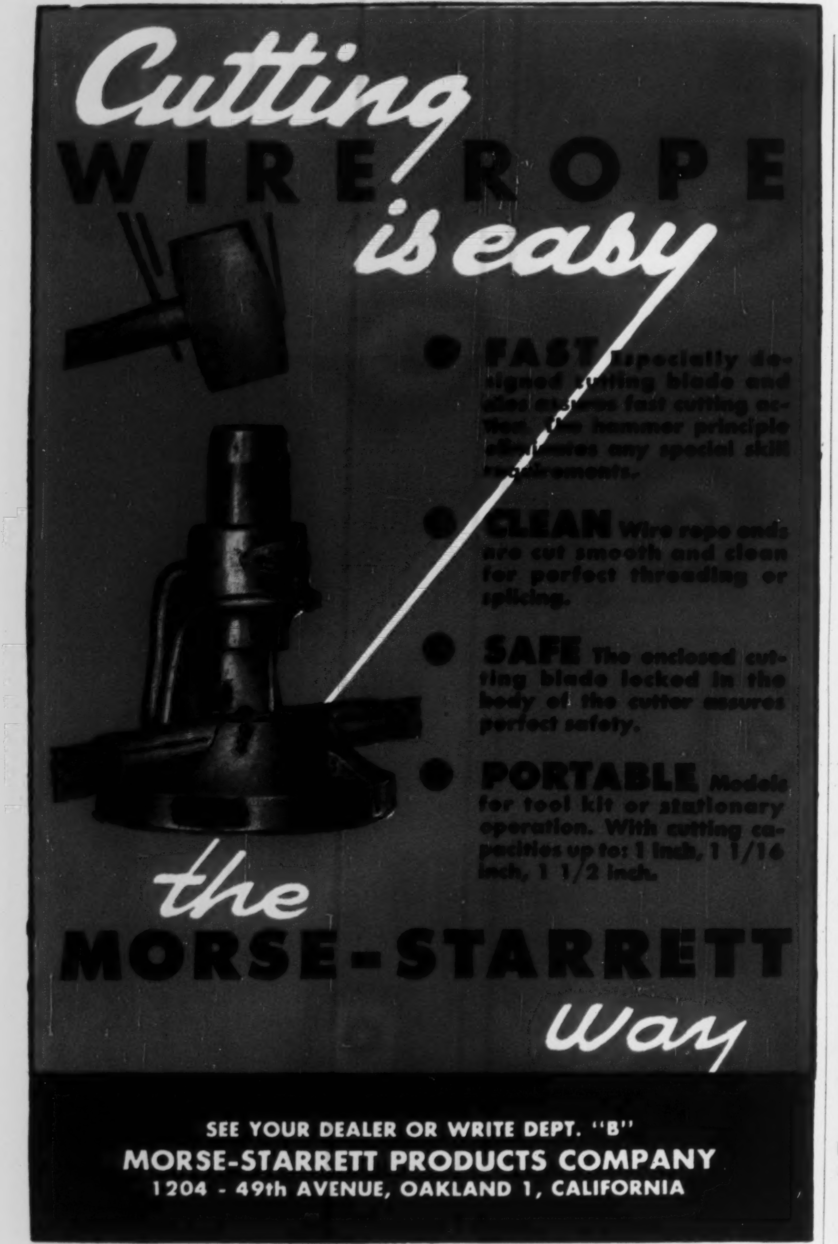
▲ **Ragnar Benson**, 4144 W. Rice St., Chicago 51, Ill., CA, **$2,650,000**, 265,000 sq. ft. MANUFACTURING and SERVICE BLDGS., McCOOK, ILL. Electro-Motive Div., General Motors Corp., General Motors Bldg., Detroit, Mich. Bids Feb. 2, awarded Feb. 14. CD 1/25.

▲ **Nelson Realty Co.**, 25100 Southfield Rd., Detroit 19, Mich. Owner Builds. **$5,000,000**. Roseland Woods, 235 brick ranch HOUSES, Evergreen Rd., south of Nine Mile Rd., SOUTHFIELD, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 6 Iowa March 20, 21 Texas
STREETS AND ROADS
March 6 Iowa March 20, 21 Texas



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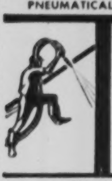

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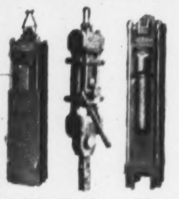

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80 Richards Ave., Dover, N. J.

▲ **Montana**—BA 3/15—Washington Water Power Co., W 825 Trent St., Spokane, Wash., constr. 4 sections of $85,000,000 Noxon Rapids Dam, northeast bank, cutoff wall section of northeast bank, southwest bank, concrete center section.

▲† **Texas**—BA 3/27—International Boundary & Water Comn., U. S. and Mexico, L. H. Hewitt, U. S. Comr. and David Herrera Jordan, Mexican Comr., Box 1859, El Paso, Tex. Anzalduas Dam, Lower Rio Grande Flood Control Proj., 8 mi. south of McAllen Tex. Total est. $5,000,000. CD 2/7.

BUILDINGS—BA

▲ **Neb., Omaha**—GENERATING UNIT—BA 3/22—Omaha Public Power Dist., 17th and Harney Sts., part of second generating unit, incl. installing electrical equip. and wiring at station substation and yard facilities. Pioneer Service & Eng. Co., 231 S. LaSalle St., Chicago, Ill., engrs. CD 8/17/51.

▲ **Minn., St. Paul**—OFFICE—BA About 3/29—State, Dpt. Admin., P. T. Peterson, dir. Purchases, 19 State Capitol, 8 story, sub-bsmnt., 146x482 ft. Minn. State Highway Dept. Office, Tice St. and Fuller Ave. on Capitol Mall, $6,000,000, Ellerbe & Co., E. 505 First National Bank Bldg., archts. CD 12/15/53.

▲ **Neb., Omaha**—GENERATING UNIT—BA 3/30—Omaha Public Power Dist., 17th and Harney Sts., third generating unit, $16,500,000. Pioneer Service & Eng. Co., 231 S. LaSalle St., Chicago, Ill., engrs. CD 2/6.

HEAVY CONSTRUCTION—LB & CA

▲† **T. C. Bateson Constr. Co.**, 6800 Denton Dr., Dallas, Tex. CA **$3,081,622**. maintenance hangar and utilities, Smoky Hill Air Force Base, Inv. 23-028-56-55-56, SALINA, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. CD 2/10, under LB.

▲† **Brodie Constr. Co.**, Box 2064, Amarillo, Tex. CA **$3,221,207**. Bonito water transmission line, approx. 80 mi. gravity water line 10- to 22-in., appurtenances, Holloman Air Force Base, ENG-29-005-56-15, ALAMAGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. CD 2/8, under LB.

BUILDINGS—LB & CA

▲ **Bechtel International Corp.**, 220 Bush St., San Francisco, Calif. CA **$30,000,000**, Alumina PLANT at LaQuinta, between Ingleside and Gregory, near CORPUS CHRISTI, TEX. Reynolds Metals Co., 3 and Grace St., Richmond, Va. CD 8/15, under Tex., Gregory.

▲ **Farnsworth & Chambers Co., Inc.**, 3018 Leeland Ave., Houston, Tex. CA **$2,202,000**. Frank M. Black Junior HIGH SCHOOL, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol Ave., Houston 2, Tex. Bids Feb. 2, awarded Feb. 13. CD 2/13, under LB.

▲ **Fisher Constr. Co.**, 4711 Greeley St., Houston, Tex. LB **$2,182,900**, est. $1,000,000. West Bellaire Junior HIGH SCHOOL, south side Bellaire Blvd., HOUSTON, TEX. Houston Independent School Dist. 1300 Capitol St., Houston, Tex. Bids Feb. 16. CD 12/21.

▲ **H. B. Zachry Co.**, W. Harding Blvd., San Antonio, Tex., CA Est. **$2,530,000**. 22,000 kw STEAM-TURBO-GENERATING PLANT, LUBBOCK, TEX. City, City Hall, Lubbock, Tex. Nelson Miner & Co., Box 116, Comfort, Tex., engrs. CD 11/16.

▲ **Henry C. Beck Co.**, 607 First Natl. Bank Bldg., Dallas, Tex., LB **$6,816,627**, est. $6,750,000. BANK, OFFICE, SAN ANTONIO, TEX. National Bank of Commerce, Soledad and Travis Sts., San Antonio, Tex. Bids Feb. 14. CD 1/31.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 14 California

BUILDINGS—BA

▲ **Wash., Spokane**—DEPARTMENT STORE—BA 3/23—Bon Marche, Main and Howard Sts., 5 story, bsmnt., rein.-con. Bon Marche Department Store addn. for Allied Department Stores, 401 Fifth Ave., New York, N. Y. $2,500,000. J. Graham & Co., 1426 5 Ave., Seattle, archts. CD 2/16.

HEAVY CONSTRUCTION—LB & CA

▲† **Gibbons & Reed Co.**, P. O. Box 2429, Salt Lake City, Utah, CA **$2,152,663**, Schedule B, apron parking, ENG-4290, HILL AIR FORCE BASE, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Jan. 25, awarded Jan. 27. CD 1/30, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

Calif.—**Arthur B. Siri, Inc.**, 1357 Cleveland Ave., Santa Rosa, Calif., LB, **$782,340**, est. $715,000 (2 bidders) two 37 ft. roadbeds separated by 22 ft. median for 4-lane divided hy. for 2.9 mi. U.S. 101 in Arcata and 1 mi. south of Mad River and on U.S. 299, with frontage roads, intersections, approaches and turning lanes, Humboldt Co.;

Calif.—**Baldwin Constr. Co.**, P.O. Box 269, Marysville, Calif., LB, **$210,218**, est. $295,000 (6 bidders) plant mix surf. 9.2 mi., Modoc Co.,

Calif.—**M. J. B. Constr. Co. & Lord & Bishop, Inc.**, 322 Elks Bldg., Stockton, Calif., LB **$1,975,959**, est. $2,350,000 (9 bidders) 4.8 mi. Sacramento-Lodi Freeway U.S. 99, San Joaquin Co. Bids Feb. 15. CD 1/19.

▲ **Fred J. Early Jr. Co., Inc.**, 22138 S. Vermont Ave., Torrance, Calif., LB, **$2,426,894**, (6 bidders) Proj. 70, Slauson Ave. Storm Drain, Section No. 6, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Feb. 17. CD 1/25.

(Proposal Advertisements see p. 86 to 88)

Unit Prices

Road and Bridges Complicated by Drainage Problem

Five miles of bituminous road through Riverside, New Mexico, and two bridges will cost the State Highway Department $897,648. The bridges are parallel concrete and steel structures, each 201 feet long. A difficult drainage problem requires 4,278 linear feet of 8-in. perforated corrugated metal underdrain in addition to the usual culverts.

The New Mexico State Highway Department awarded the contract for this Federal Aid Project to Lowdermilk Bros. of Espanola, N. Mex. George Lalla, Espanola, is consulting engineer.

Work includes grading, drainage structures, controlled gradation subbase, base course, plant mix bituminous surfacing, the two bridges, four major concrete box culverts, and miscellaneous construction. Class A concrete must test at 3,000 pounds after 28 days.

Minimum wage rates include $2.50 to $2.625 per hour for cement masons, $2.50 to $2.75 for iron and steel workers, $2.43 to $2.58 for equipment operators and pile drivers, and $1.50 for unskilled laborers.

The five bidders include:

1C	Lowdermilk Bros., Espanola, N. Mex	$897,648
2	G. I. Martin & O. D. Cowart, Albuquerque	908,693
5	Skousen-Hise Contracting Co., Albuquerque	987,844
EE	George Lalla, Espanola	970,387

Bids: 1-27-56 Items	Unit	Quantity	Unit Prices 1C	2
Road				
Old structures, remov	ls	job	$25,000	$9,360
Obstructions, remov	ls	job	7,500	5,350
Excav, unclass	cy	90,470	0.27	0.25
for structures	cy	566	2.00	2.00
for pipe culv	cy	4,188	2.00	2.00
Borrow, ordinary	cy	81,782	0.22	0.20
Watering	Mgal	7,266	0.50	0.50
Rolling, tamping roller	hr	945	5.00	9.00
pneumatic tired	hr	2,165	4.00	4.00
steel tired	hr	968	7.50	6.00
Roller operation, 50-ton	hr	114	14.00	15.00
Tamping, mechanical	hr	1,287	3.75	5.00
Overhaul	stay	103,607	0.01	0.015
Haul, quarter mile yard	ea	327,049	0.04	0.04
ton mile	ea	37,319	0.10	0.10
Old road, obliterate	mi	0.9	250.00	500.00
Ditches, contour	lf	3,000	0.10	0.10
Pipe underdr, perf, CMP, galv, 8"	lf	4,278	4.25	4.50
Cattle guard, rdway, 12′	ea	15	1,200	900.00
18′	ea	5	1,600	1,500
Fence, barbed wire, galv	lf	29,472	0.20	0.20
Gates, standard type	ea	87	15.00	40.00
Bracing	ea	482	10.00	8.00
Markers, right-of-way	ea	22	8.00	7.00
Fed Aid Proj, type II	ea	2	50.00	100.00
Warn posts, refl, treated timber, 6"	ea	70	6.00	6.00
Sub-base gradtn, controlled	t	64,227	0.48	0.53
Base course	t	37,344	0.53	0.73
Bit, matl, type MC-1	bbl	1,537	6.75	6.90
type 120-150	bbl	587	7.20	7.40
type 85-100	bbl	12,281	5.90	6.00
tack	bbl	961	7.20	6.00
Cover matl	t	6,257	3.00	3.50
Surf course, plant mix, dense graded	t	22,915	2.75	3.00
open graded	t	10,362	3.25	4.50
Conc, cl A	cy	1,467	47.50	60.00
blanket	sy	1,816	7.00	7.00
chatter bars	cy	5	100.00	200.00
Reinf for conc struct	lb	384,143	0.14	0.14
Wire fabr for conc blanket	lb	6,864	0.23	0.25
Curb & gutter, conc	lf	33,119	2.00	1.40
median	lf	35,163	1.40	1.10
Sidewalk	sy	357	4.35	3.00
Rock retards, grouted	cy	11	25.00	20.00
Culv pipe, CM, 18"	lf	358	4.00	4.00
24"	lf	4,776	4.75	5.00
30"	lf	2,620	6.00	6.00
36"	lf	240	9.50	11.00
remov & relay 12"	lf	10	5.00	6.00
18"	lf	15	6.00	7.00
Struct stl	lb	25,448	0.40	0.40
Headgate, timber, untreat	Mbm	4,367	575.00	500.00
Gutter, conc	lf	6,685	2.00	1.40
Frame & manhole cover	ea	5	75.00	125.00
Cattle guard, remov & rebuild	ea	2	750.00	500.00
Conduit, galv iron, 2"	lf	54	3.50	6.00
fiber, 2"	lf	250	2.75	3.00
Asphalt, HVMS emulsified				
fcr treated base	bbl	682	7.60	9.00
for seal coat	bbl	440	7.75	9.00
Sub-total			$788,283,	$786,213
Bridges				
Excav for struct	cy	20	10.00	20.00
Riprap, wire enclosed	cy	259	9.00	10.00
Wire fabrik for riprap	lb	4,956	0.30	0.30
Excav for riprap	cy	86	2.00	3.00
Steel stakes for riprap	lf	195	2.00	3.00
Conc, 61 A, superstruct	cy	760	50.00	60.00
substruct	cy	228	65.00	60.00
piling	cy	162	35.00	30.00
Piles, closed end stl pipe	lf	5,360	6.60	8.00
Bri railing, stl, type A	lf	390	17.75	18.00
type B	lf	390	10.25	8.00
Sub-total			$109,366	$122,480

Time to complete: 250 working days
Liquidated damages: $100.00 per day

Soil Conservation, Nebr.

For $4,211, 16.4% more than the engineer's estimate, a dam for the temporary detention and control of runoff water will be built for the Soil Conservation Service, Lincoln, Nebraska, by Donald L. De Freece of Sterling, Nebr. Sidney H. Haakenstad, Sterling, Nebr., is consulting engineer.

Its maximum width is 55 feet, length 450 feet and depth 11 feet above ground line. It is located at Lynn Watershed, southeast of Sprague, Lancaster County, Nebr.

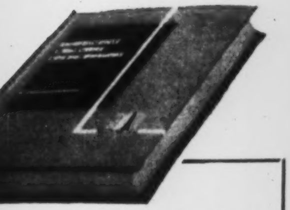
Class B concrete has to test at 3,000 lb per sq in: after 28 days.

The bidders are:

1C	Donald L. De Freece, Sterling, Nebr	$4,211
2	Norman Hellbusch, Gilead, Nebr	$4,421
3	Boeve Construction Co., Sterling, Nebr	$4,986
EE	Sidney H. Haakenstad, Lincoln, Nebr	$3,616

Bids: 12-23-55 Items:	Unit	Quantity	Unit Prices 1C	2
Conc, cl B	cy	313	$12.50	$30.00
Steel, reinf	lb	139	0.15	0.15
Embankment	cy	4,475	0.21	0.50
Pipe riser, CM, 10 ga, 60"	ea	1	260.00	300.00
Principal spillway, pipe, 12 ga, 48"	lf	74	21.00	18.00
Diaphragm, std met, 14 ga	ea	2	130.00	100.00
Lumber, creosote treated	bfm	110	0.50	0.20
Pipe, stl, for railing	lf	38.5	1.00	0.40
Diversion ditches, A & B	lf	290	2.00	0.30
Trees, clear & grubb				
3" to 6"	ea	28	1.50	2.00
6" to 9"	ea	9	3.00	2.00
9" to 12"	ea	2	5.00	2.00
12" to 18"	ea	4	8.00	2.00
18" to 24"	ea	3	25.00	2.00
Excav, common	cy	200	0.25	0.10

Time allowed: 50 calendar days
Liquidated damages: $25.00 per day



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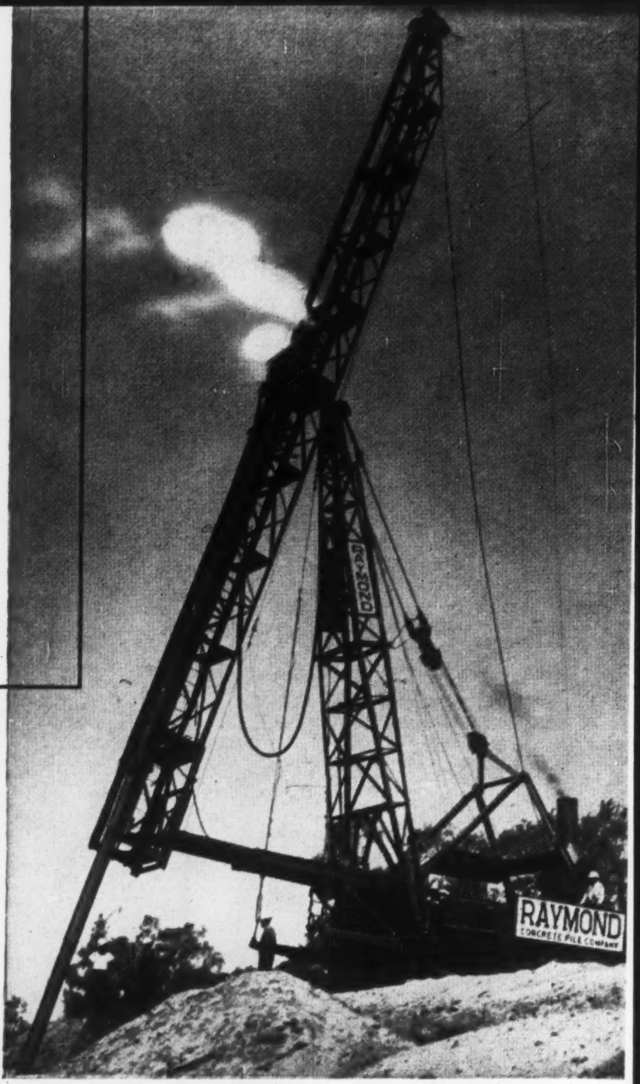
RAYMOND

. . . specialists in tough jobs!



During the 59 years of Raymond Concrete Pile Company's operations, many tough jobs have come our way. Some merely took hard work and a little ingenuity to solve. Others were unsolvable with the equipment and methods available . . . so we developed new equipment and methods to meet the special requirements.

Engineering feats that once were out of the ordinary are now everyday occurrences for Raymond's men and machines. We like to feel that this is one of the reasons for our continuous growth. We always welcome the challenge of a tough job.

RAYMOND

CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.

AROUND THE WORLD
FOUNDED 1897

Branch Offices in Principal Cities of the United States, Canada, Central and South America

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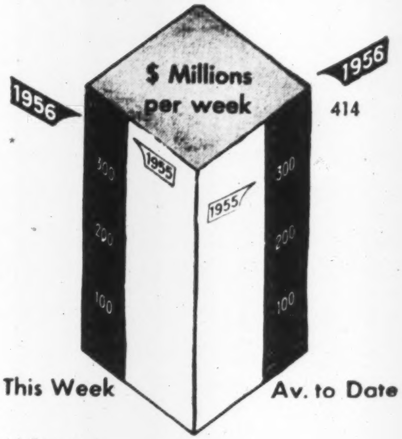
RAYMOND'S DOMESTIC SERVICES... SOIL INVESTIGATIONS • FOUNDATION CONSTRUCTION • HARBOR AND WATERFRONT IMPROVEMENTS • PRESTRESSED CONCRETE CONSTRUCTION • CEMENT-MORTAR LINING OF WATER, OIL AND GAS PIPELINES, IN PLACE

RAYMOND'S SERVICES ABROAD...

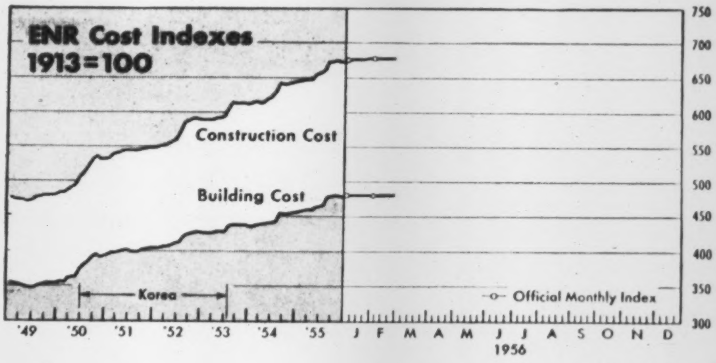
IN ADDITION TO THE ABOVE, ALL TYPES OF GENERAL CONSTRUCTION

Construction Scoreboard

Contract Awards



*4-Day week



ENR INDEXES (1913 = 100), 20-cities' average	1956 Feb. 23	Percent Change from last Month	Percent Change from last Year
Construction Cost	680.06	−0.01	+5.3
Building Cost	482.93	−0.02	+5.1

To convert above indexes to 1926 = 100. Divide Construction Cost by 2.080; Building Cost by 1.845. To convert to 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

By Ownership	This Week* ($ millions)	Cum. 9 wks 1956 ($ millions)	Cum. 9 wks Chge %
Federal	$19.1	$336.5	+16
State and municipal	80.2	1026.3	+35
Total Public	99.3	1362.8	+30
Total Private	256.4	2366.9	+39
U. S. Total	$355.7*	$3729.7	+35
By Type of Work			
Waterworks	$2.3	$47.3	− 9
Sewerage	5.4	142.1	+121
Bridges	9.1	97.1	+ 8
Highways	42.3	346.6	+19
Earthwork Waterways	3.3	109.0	+76
Buildings:			
Public, Excl. Housing	19.2	317.9	+19
Public Housing	3.7	76.6	+239
Private Housing	168.7	1158.8	+12
Commercial	36.7	127.3	+96
Industrial	49.0	685.2	+85
Unclassified	16.0	321.8	+17
U. S. Total	$355.7*	$3729.7	+35

* 4-Day week

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Feb. 23 ($ millions)	Cum. 8 wks 1956 ($ millions)	Cum. 8 wks Chge '55-'56 %
Corporate Securities	$30.3	$333.8	−22
State and Municipal:			
All Except Housg.	133.8	621.1	+11
Housing	2.2	20.3	−43
Federal Loans	2.7	15.0	−11
Federal Aid	...	...	...
Total Nonfederal	$169.0	$993.2	−5
Federal Appropriations:			
In U. S.	...	..	...
Outside U. S.	..		.
Total New Capital	$169.0	$993.2	−5

HEAVY CONSTRUCTION BACKLOG Millions of dollars	Jan. 31 1956	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$95,145	+2.2	+18.3
By Ownership—			
Private	39,640	+1.2	+18.9
State and Municipal	42,746	+3.8	+22.9
Federal	12,759	+0.1	+ 3.7
By Type of Work—			
Waterworks	1,986	−0.2	+21.2
Sewerage	2,979	−0.3	+ 2.1
Bridges	2,714	+1.2	+ 2.8
Highways	11,382	+0.6	+30.2
Earthwork, Waterways	11,265	−0.2	+20.8
Public Buildings	16,547	+0.9	+ 8.6
Industrial Buildings	14,674	+2.6	+25.2
Commercial Buildings	15,745	−0.1	+20.2
Unclassified, Private	9,221*	+1.7	+ 8.4
Unclassified, Public	8,631	+19.1	+30.8
By Regions—			
New England	5,035	−0.4	+27.5
Middle Atlantic	19,832	+0.2	+13.9
South	11,513	+0.6	+16.3
Middle West	16,859	+1.9	+17.3
West of the Mississippi	22,105	+0.6	+ 8.9
Far West	19,801	+8.5	+37.7

* Includes private bridges, $78 million

FLOW OF NEW PROJECTS INTO THE BACKLOG Millions of dollars	1956 Jan.	1956 1-Month	Percent Change from '55 Jan.	Percent Change from '55 Year-Cum.
Total U. S. (ENR reported)	$3,118	$3,118	+ 83	+ 83
By Ownership—				
Private	1,042	1,042	+ 44	+ 44
State and Municipal	1,913	1,913	+101	+101
Federal	163	163	+474	+474
By Type of Work—				
Waterworks	16	16	− 27	− 27
Sewerage	28	28	+ 29	+ 29
Bridges	41	41	− 90	− 90
Highways	25	25	− 89	− 89
Earthwork, Waterways	139	139	+830	+830
Public Buildings	378	378	+ 44	+ 44
Industrial Buildings	486	486	+217	+217
Commercial: Mass Housing	161	161	− 53	− 53
Other Building	213	213	+ 40	+ 40
Unclassified, Private	182	182	+144	+144
Unclassified, Public	1,449	1,449	+3,368	+3,368

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Mar 8—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Mar 15—Iron and Steel Products, Pipe
- Mar 22—Wood Products, Glass, Explosives, Chemicals
- Mar 29—Clay Products, Lime, Plaster, Paint, Roofing

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft		GYPSUM BOARD LATH plain or perf per Msq ft	GYPSUM SHEATHING tongue & groove per Msq ft	FIBER BOARD SHEATHING asph impreg & coat per Msq ft		FIBER BOARD INSULATION sq edge, paint per Msq ft	MINERAL WOOL INSULATION†		GLASS FIBER INSULATION†		ALUMINUM FOIL	
	½"	⅝"	⅜" x 16" x 48"	½" x 2' x 8'	½" sq ed	25/32" T&G	½"	loose, per 40-lb bag a	3" batts per M sf	loose, per 40-lb bag a	3" batts per M sf	60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq. ft.
Atlanta	$75.00	$65.00	$45.00	$75.00	$75.00	$125.00	$75.00	$1.08	$75.00	$1.45b	$85.00	....	....
Baltimore	49.25f	43.50f	31.30f	53.00f	65.00f	108.50f	69.00f	1.30	66.50	1.60	45.00	$4.00g	$33.50
Birmingham	79.00	65.00	51.11	82.00	77.00	130.00	76.00	1.40	70.00	1.60	75.00	3.39g	....
Boston	56.00m	46.50m	33.00m	52.00m	64.00m	109.00m	79.00hn	1.45	75.00	1.40	56.00	5.80	54.50
Chicago	65.00	52.00	43.00	60.00	80.00	120.00	80.00	1.85	80.00	....	63/65bb	5.25e	....
Cincinnati	46.40w	41.60w	30.80w	47.81w	65.00w	110.00w	65.00w	....	61.00	1.25	75.00	2.81	50.00w
Cleveland	60.50	60.00	40.00	65.00	70.00	111.00	70.00	1.35/1.50	75.00	1.60**	61.50**	17.50	50/55
Dallas	58.00	55.00	42.50	65.00	73.50	122.50	70.00	1.90	65.00	1.35	65.83	4.25	....
Denver	60.00	52.50	40.00	60.00	72.90	123.00	71.90	....	71.00h	1.47	55.00	11.00r	21.00
Detroit	53.00	48.50	36.00	56.00	55.50	95.00	56.00	....	.....	1.95b	77.25	....	.....
Kansas City	65.00	55.00	40.00	65.00	72.00	120.00	75.00	1.40	80.00	1.40	80.00	11.24dt	19.44
Los Angeles	60.00	52.50	0.325x	60.00	71.87	121.25	80.00	....	83.00	1.35s	64.00	4.20g	....
Minneapolis	72.00	63.00	0.40x	80.00	70.00	114.00	70.00	1.60	78.00	1.30	78.00	6.50	....
Montreal	60.00	52.00	36/39	53.00	60.00	....	62.00	1.00	62.00	1.00	62.00	20.00o	50.00
New Orleans	70.00	60.00	45.00	65.00	67.50	125.00	75.00	1.95	68.00**	....	.....	15.66	.....
New York	52.00	45.50	35.00	53.00	69.00	109.00	70.50	1.55	69.00	1.90b	72.00	5.20	48.80cc
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	49.20	....	63/70	....	70/75	5.50/6	34.50/44.50
Pittsburgh	65.00	55.00	40.00	68.00	65.00	105.00	60.00	1.90	72.00	1.90	72.00	4.10	.....
St. Louis	65.00	55.00	40.00	65.00	75.00	120.00	75.00	1.66	85.00	1.65	69.00	4.75d	.....
San Francisco	52.00c	44.75	0.34x	56.00k	58.00	94.00	56.00	1.60	66.50	1.55	66.50	4.82	52.50
Seattle	57.50	50.50	40.00	59.00	71.40	120.35	70.20	1.75y	81.00	1.65aaz	62.00aa	4.25g	51.75
Toronto	61.00	50.00	40.00	64.50	75.00	......	......	0.90	51.00	....	51.00	15.86o	39.50

•a for hand packing •b per 30# bag •c carloads •d 40# kraft paper •f full trailer loads •g 80# kraft paper backing •h LCL •l flameproof $75.00 •k plain core; asph core $56/M sq ft •m 10 ton quantities •n distributor's siding •o per Msf roll •p per sf •r per cwt •s per 35# bag •t per M sq ft •w fob city •x per sq. yd. •y 26# bag •z 32# bag •aa fob warehouse •bb 2" •cc in 250 sf rolls, of 16", 20", or 24" width.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$3.25	$2.70	$2.95	$2.70	$2.875	$3.00	$3.05 + 10¢^{d}	$1.40	$1.40
Baltimore	3.10 + 10¢^{d}	2.85 + 7½¢^{t}	3.25 + 7½¢^{t}	2.55/2.80^{g}	3.00 + 7½¢^{t}	3.075	3.00 + 7½¢^{t}	1.60 + 7½¢^{t}	1.60 + 7½¢^{t}
Birmingham	3.50	2.60	2.925 + 7½¢^{k}	2.42	2.82	3.175	3.05 + 7½¢^{k}	1.50	1.60
Boston	3.25 + 10¢^{v}	2.85 + 7½¢^{k}	3.40 + 7½¢^{k}	3.40	3.25 + 20¢^{I}	3.10 + 12¢^{K}	3.20 + 10¢^{d}	2.15 + 7¢^{Y}	2.15 + 7¢^{Y}
Chicago	3.55 + 7½¢^{f}	3.275 + 10¢^{v}	3.425 + 7½¢^{k}	3.175 + 5¢^{m}	3.44 + 23¢^{y}	3.48 + 21¢^{k}	3.22 + 22¢^{aa}	2.50 + 7½¢^{k}	2.50 + 7½¢^{k}
Cincinnati	3.45	3.15	3.20 + 7½¢^{k}	2.925/3.175	3.225	3.375 + 3½¢^{N}	3.35 + 9½¢^{Z}	2.20	2.10
Cleveland	3.40 + 7½¢^{k}	3.40	3.325 + 7½¢^{k}	3.40	3.40	3.425	3.30 + 10¢^{d}	2.65	2.65
Dallas	3.625	2.875	2.95	2.875 + 7½¢^{k}	3.437	3.00	3.105 + 8¢^{bb}	1.50	1.50
Denver	3.50	2.975	2.95 + 7½¢^{t}	2.83	3.30 + 7½¢^{t}	3.00	3.05 + 15¢^{U}	1.925	1.925
Detroit	3.38 + 20¢**	3.10 + 22½¢^{q}	3.325 + 15¢^{F}	3.15 + 15¢**	3.36 + 23¢^{I}	3.35 + 30½¢^{H}	3.295 + 22½¢^{k}	2.40 + 15¢**	2.45 + 10¢^{v}
Kansas City	3.625	2.85	3.00	3.045	3.325	3.05 + 13¢^{O}	3.15 + 7½¢^{k}	2.105	2.13
Los Angeles	3.60	2.90 + 10¢^{d}	3.25 + 7½¢^{k}	2.81 + 10¢^{d}	3.625 + 12½¢^{S}	3.45	3.425 + 10¢^{d}	2.20 + 7½¢^{k}	2.20 + 7½¢^{k}
Minneapolis	3.325	2.90	3.07	2.85	3.05 + 13¢^{G}	3.00 + 29¢^{n}	3.00 + 7½¢^{k}	2.15	2.15
New Orleans	3.175	2.60	2.90 + 7½¢^{k}	2.80	2.80	3.025 + 7½¢^{k}	3.00 + 10¢^{v}	1.475	1.475
New York	3.80 + 35¢^{bR}	3.55 + 28½¢^{bJ}	3.85 + 33¢^{r}	3.90 + 19½¢^{J}	3.85 + 50¢^{A}	3.30 + 36¢^{aF}	3.75 + 34¢^{bL}	2.50 + 20¢^{V}	2.50 + 20¢^{V}
Philadelphia	3.75 + 17¢^{i}	3.30	3.55 + 18¢^{M}	3.07/3.82 + 10¢^{v}	3.50 + 15¢^{C}	3.65 + 15¢^{av}	3.50 + 11½¢^{g}	2.025	2.325
Pittsburgh	3.60 + 17½¢^{k}	3.20 + 7½¢^{k}	3.30 + 7½¢^{k}	3.35 + 7½¢^{k}	3.40 + 17½¢^{k}	3.50	3.45 + 7½¢^{k}	2.10 + 7½¢^{k}	1.98 + 10¢^{d}
St. Louis	3.75 + 19¢^{i}	3.25 + 7½¢^{k}	3.25 + 7½¢^{k}	3.325	3.425 + 7½¢^{k}	3.50 + 25¢^{r}	3.45 + 21¢^{K}	2.30 + 7½¢^{k}	2.30 + 7½¢^{k}
San Francisco	3.65 + 10¢^{v}	3.06 + 10¢^{v}	3.25 + 10¢^{v}	2.86 + 10¢^{v}	3.56 + 10¢^{v}	3.22½ + 20¢^{f}	3.20 + 36¢^{K}	2.175 + 10¢^{v}	2.175 + 10¢^{v}
Seattle	3.40 + 10¢^{d}	2.80 + 10¢^{d}	3.07 + 10¢^{d}	2.90 + 10¢^{d}	3.15 + 10¢^{d}	3.16 + 13½¢^{X}	3.10 + 21¢^{T}	2.37 + 10¢^{d}	2.37 + 10¢^{d}
Montreal	2.10 + 14¢†	1.90 + 15¢†	2.00 + 16¢†	1.80 + 14¢†	2.12 + 18¢†	2.10 + 18¢†	2.12 + 18¢†	1.30 + 10¢†	1.30 + 10¢†
Toronto	2.46 + 10¢**	2.30 + 11¢**	2.30 + 9¢**	2.35 + 9¢**	2.40 + 10¢**	2.50 + 10¢**	2.44 + 10¢**	1.35 + 5¢**	1.35 + 5¢**

* Cost of living bonus now included in basic wage. † 8% fringe benefits. ** 4% vacation fund. •a 6 hr. day. •b 7 hr. day. •c 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. •d 10¢ H&WF. •e 10¢ VF. •f 6% WF. •g 11½¢ WF. •h $2.85 homes & housing plus 7½¢ WF. •i 17¢ WF. •j 10½¢ hr. WF. •k 7½¢ hr. WF. •l 4% VF. •m 5¢ hr. WF. •n 8¢ H&WF, 6% VF, 1% PF. •o 10¢ PF. •p 3% WF, 3% PF. •q 10¢ ins; 4% vac. and holiday pay. •r 4% WF and 20¢ PF. •s 5% W&PF, 4% VF, 1% NC, 6 PH. •t 7½¢ H&WF. •u 1½% PF. •v 10¢ WF. •w Negotiating. •x 5¢ VP. •y 23¢ WF. •A 15¢ WF, 15¢ PF, 20¢ B.F. •C 15¢ WF. •D 10¢ H&WF, 5¢ organ. •E 6% WF, plus travel pay per day. •F Plus $4 per day Annuity contrib. •G 3¢ Prom. •H 7¢ WF, 6% VF. •I 15¢ H&WF, 5¢ for Advtg. •J 5% WF, 6 PH. •K 11¢ WF, 12½¢ VF, 10¢ PF. •L 3% WF, 3% PF, 2% VF, 1% EF. •M 7½¢ PF. •N 1% WF. •O 10¢ WF, 1% PF. •P 10¢ hosp. ins.; 5¢ vac. •Q 1 drum, 2 drums $3.25/3.40. •R 12¢ WF and 1¢ apprentice. •S 12½¢ H and WF. •T 21¢ H, W & VF. •U 7½¢ WF, 4% VF. •V 5% WF, 3% PF. •W 2% F. •X 6¢ VF, & 7½¢ H & WF. •Y 7¢ H & WF. •Z 9½¢ WF. •aa 7¢ WF, 15¢ PF. •bb 8¢ WF.

EQUIPMENT OPERATOR WAGE RATES—Base rate + fringe benefits

	Truck drivers			Tractor Operators incl. bulldozers			Tractor scraper	Power cranes & shovels		Motor grader	Air comp	Air tool
	1½ T	4 cy	+4 cy	34-49 hp	70-100 hp	100 & over	15-16 cy	½ cy	¾ cy	oper	oper	oper
Atlanta	$1.50	$	$	$2.425	$2.425	$2.425	$2.425	$2.95	$2.95	$2.425	$2.20	$1.60
Baltimore	1.60 + 7½¢^{u}	1.75 + 7½¢^{u}	1.85 + 7½¢^{u}	2.85/3.00^{b}	2.85/3.00^{b}	2.85/3.00^{b}	2.85/3.00^{b}	3.25/3.40^{b}	3.25/3.40^{b}	2.85/3.00^{b}	2.85/3.00^{b}	2.25
Birmingham	1.59	1.85^{ff}	1.92^{gg}	2.56	2.56	2.56	2.70	2.70	2.70	2.61	2.285	1.65
Boston	2.10^{f}			3.025^{d}	3.025^{d}	3.025^{d}	3.025^{d}	3.40	3.40	3.40	2.95	2.22^{e}
Chicago	2.10 + 12¢^{frr}	2.20 + 12¢^{rr}	2.30 + 12¢^{rr}	2.85 + 5¢^{a}	3.00 + 5¢^{a}	3.05 + 5¢^{a}	2.85 + 5¢^{a}	3.45 + 5¢^{a}	3.45 + 5¢^{a}	2.95 + 5¢^{a}	2.95 + 5¢^{a}	
Cincinnati	2.20 + 6¢^{m}	2.30 + 6¢^{m}	2.40 + 6¢^{m}	2.925	2.925	2.925	2.925	3.175	3.175	3.175	3.175	3.175
Cleveland	2.42	2.42	2.42	3.15	3.15	3.15	3.15	3.40	3.40	3.15^{k}	3.025	3.025
Dallas	1.50	1.50	1.50	1.50/2.625^{l}	1.50/2.625^{l}	1.50/2.625^{l}	1.50/2.625^{l}	1.50/2.625^{l}	1.50/2.625^{l}	1.50/2.625^{l}	1.50/2.00^{l}	1.50/2.00^{l}
Denver	2.15	2.15	2.25	2.15	2.76	2.76	2.76	2.93	2.93	2.76	2.76	2.35
Detroit	2.35 + 6¢^{m}	2.25 + 6¢^{m}	2.35 + 6¢^{m}	3.20 + 10¢^{m}	3.20 + 10¢^{m}	3.20 + 10¢^{m}	3.20 + 10¢^{m}	3.20 + 10¢^{m}	3.20 + 10¢^{m}	3.20 + 10¢^{m}	2.925 + 10¢^{m}	2.58 + 20¢^{m}
Kansas City	2.065^{n}	2.065^{o}	2.14^{p}	2.25	2.80^{q}	2.80^{q}	2.80^{r}	3.045	3.045	2.66	2.80^{t}	2.19
Los Angeles	2.305 + 7½¢^{u}	2.305 + 7½¢^{u}	2.335 + 7½¢^{u}	2.90 + 10¢^{m}	2.90 + 10¢^{m}	2.90 + 10¢^{m}	3.24 + 10¢^{m}	3.06 + 10¢^{m}	3.06 + 10¢^{m}	3.06 + 10¢^{m}	2.49 + 10¢^{m}	2.41 + 7½¢^{u}
Minneapolis	2.15	2.15^{v}	2.30^{w}	2.63	2.85^{q}	3.07^{x}	2.85	3.07^{y}	3.33^{z}	2.63	2.52	2.35
New Orleans	1.575	1.575	1.575	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.15	1.575
New York	2.12½ + 13¢^{aa}	2.75 + 14¢^{hh}	2.75 + 14¢^{hh}	3.17½ + 25½¢^{cc}	3.17½ + 25½¢^{cc}	3.17½ + 25½¢^{cc}	3.30 + 26½¢^{cc}	4.05 + 32½¢^{cc}	4.05 + 32½¢^{cc}	3.30 + 26½¢^{cc}	3.30 + 26½¢^{cc}	2.90 + 14½¢^{ee}
Philadelphia	1.925/2.1125 + 7½¢^{u}			3.07/3.82 + 10¢^{m}			3.07/3.82 + 10¢^{m}	3.07/3.82 + 10¢^{m}		3.07/3.82 + 10¢^{m}	2.89 + 10¢^{m}	2.05 + 10¢^{m}
Pittsburgh	2.20 + 7½¢^{u}	2.20 + 7½¢^{u}	2.20 + 7½¢^{u}	2.87½ + 7½¢^{u}	3.20 + 7½¢^{u}	3.27½ + 7½¢^{u}	3.25 + 7½¢^{u}	3.35 + 7½¢^{u}	3.35 + 7½¢^{u}	3.25 + 7½¢^{u}	3.35 + 7½¢^{u}	2.20 + 7½¢^{u}
St. Louis	2.30 + 7½¢^{unn}			3.325	3.325	3.325	3.325	3.325	3.325	3.325	2.775	2.775
San Francisco	2.22½ + 10¢^{u}	2.22½ + 10¢^{u}	2.24 + 7½¢^{u}	2.97 + 10¢^{m}	2.97 + 10¢^{m}	2.97 + 10¢^{m}	2.97 + 10¢^{m}	3.30 + 10¢^{m}	3.30 + 10¢^{m}	3.13 + 10¢^{m}	2.58 + 10¢^{m}	2.30 + 10¢^{m}
Seattle	2.63 + 7½¢^{uw}	2.63 + 7½¢^{udd}	2.83 + 7½¢^{uee}	2.78 + 10¢^{m}	2.95 + 10¢^{m}	2.95 + 10¢^{m}	2.95 + 10¢^{m}	3.36 + 10¢^{m}	3.36 + 10¢^{m}	3.10 + 10¢^{m}	2.78 + 10¢^{m}	2.52 + 10¢^{m}
Montreal	1.30 + 10¢^{ll}	1.30 + 10¢^{ll}	1.30 + 10¢^{ll}	1.73 + 14¢^{ll}	1.73 + 14¢^{ll}	1.73 + 14¢^{ll}	1.73 + 14¢^{ll}	1.99 + 16¢^{ll}	1.99 + 16¢^{ll}	1.73 + 14¢^{ll}	1.80 + 15¢^{ll}	1.60 + 15¢^{ll}
Toronto	1.45 + 6¢^{ii}	1.45 + 6¢^{ii}	1.65 + 7¢^{ii}	1.90 + 8¢^{ii}	1.90 + 8¢^{ii}	1.90 + 8¢^{ii}	1.90 + 8¢^{ii}	2.35 + 9¢^{ii}	2.35 + 9¢^{ii}	—	2.05 + 8¢^{ii}	2.05 + 8¢^{ii}

•a 5¢ hr HWF •b lower rates, straight time, other broken •c 2-axle; 10-wheel $2.15; Euclid $2.35 •d Intermediate •e bldg constr; highway $2.145 •f less than 2-t •g blade •h scoop, bldg •i scoop, road •j plus $2 pd by employer for hosp. death benefits to family •k bldg constr; steel constr $3.40 •l higher rates are union, other taken from min wage scale approved by County Commissioners Court •m 10¢ H&WF •n flatbed •o under 10 cy •p over 10 cy •q over 50 hp •r blade grader •s form and subgrade •t single •u 7½¢ HWF •v up to 6 cy •w 6-8 cy •x cat oper •y up to 3½ cy •z 3½ cy & over •aa plus approx $5.30 per wk W&PF •bb 3% WF, 2% PF, 11 PH •cc 5% WF & 3% PF •dd up to 5 cy •ee 5 cy & over •ff over 1½ T but not incl 3 •gg over 3 but not incl 5 tons •hh excavating •ii 4% VP •jj 12¢ H, W & PF •kk 7½¢ WF included in base pay •ll 8% fringe benefits •nn 8 cy or less; 8-16 cy $2.90; 16-25 cy $3.15 •oo Plus $2.25 wk WF •pp 2-5 T $1.70 •rr 12¢ WF •ss 5% WF

MEXICO CITY PRICES

In Pesos, F.o.b. City		Dec. '55	Jan. '56
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.19	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.19	1.38
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl	av. per hr.	2.25	2.44
Bricklayers (8 hr. day) 1 cl	av. per hr.	2.25	2.44
Struct. Iron Workers (8 hr. day) Remachadores	av. per hr.	1.37*	1.38*

Struct. Steel, Shapes		Dec. '55	Jan. '56
3"-15" x 12 meters	per metric ton	1564.50	1564.50
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1564.50	1650.00
⅜" x 11 meters	per ton	1564.50	1650.00
½" x 11 meters	per ton	1564.50	1650.00
⅝" x 11 meters	per ton	1564.50	1650.00
¾" x 11 meters	per ton	1564.50	1650.00
1" x 11 meters	per ton	1564.50	1650.00

Gravel truck load of 3½ cu. meters		Dec. '55	Jan. '56
Blue Gravel	per tr. load	70.00	70.00
Rose Gravel	per tr. load	65.00	65.00
Cement, Std. Port. (Tolteca)	per ton	185.00	185.00
Lumber			
3rd Class Pine	per M ft.	1400.00	1900.00
1st Class Pine	per M ft.	2100.00	2750.00
2nd Class Pine	per M ft.	2000.00	2300.00

* 1st & 2nd floors. Aver rate 4.38

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.309. **ENR Common Average** $2.117

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Mar 8—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Mar 15—Iron and steel Products, Pipe
- Mar 22—Wood Products, Glass, Explosives, Chemicals
- Mar 29—Clay Products, Lime, Plaster, Paint, Roofing

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE LOAD BEARING SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$148.25p	$148.25p	$296.50p	$333.55p	......	......	$32.44p	$32.44p	$32.70	$23.50	$24.50
Baltimore	202.00	216.00	405.00	458.50	596.00	681.00	36.00k	41.00k	33.00	22.00	
Birmingham	135.00p	152.00p	......	303.00p	376.00p	465.00p	27.00ff	38.00gg	33.35	22.30	26.33
Boston	205.00†	218.40†	459.00†	467.80†	......	......	38.00p	42.35p	35.20†	30.00†	......
Chicago	135.00	145.00	280.00	......	......	......	28.00	30.00	36.00	29.00	......
Cincinnati	205.00j	225.00j	296.00jdd	218.00	288.00	314.00	45.00j	46.00j	28.50j	24.25j	28.50
Cleveland	195.00**	207.00**	......	......	......	......	40.00	42.00	29.75	24.75	33.50ee
Dallas	......	152.00	......	......	......	......	27.75	45.00	32.00	31.00	......
Denver	......		......	......	......	......	34.00	41.00	34.80bb	28.00bb	34.00bb
Detroit	189.00	201.00	377.00	......	551.00	630.00	41.00cc	40.50cc	36.00	31.00	......
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	29.25	29.25	32.00	27.50	28.50
Los Angeles	r	r	r	r	r	r	27.50§		34.00	34.00	35.00
Minneapolis	185.00p	206.00p	422.00p	206.00pw	......	......	43.00*p	50.00	42.00bbe	32.00bbe	44.00bbdz
Montreal	164.00aq	178.00au	325.00au	270.00	288.00	......	39.50	46.00	39.20	22.00	13.75u
New Orleans	180.00	180.00	340.00	380.00	......	......	35.00	35.00	30.60	21.50	21.50
New York	151.90h	162.00h	222.70ch	245.40hn	......	......	44.00	......	37.00	35.00	......
Philadelphia	156.30	166.80	312.70	375.20	......	......	30/34	34/40	27.60	25.60	3.17
Pittsburgh	154.00	162.00	292.00	340.00	420.00	495.00	36.00	46.00y	32.00	29.50	2.97m
St. Louis	162.00cc	175.00cc	358.00cc	500.00cc	......	621.50	43.00xl	41.50x	.95zaa	.80zaa	1.35aazpee
San Francisco	156.85a*	177.10a*	235.30dda*	......	......	......	39.50*	39.50*	26.60	26.60	30.50
Seattle	225.00cc	250.00cc	350.00cc	250.00ccw	......	......	43.00s	55.00s	46.00shh	37.50hh	3.90mhh
Toronto	138.70	148.90	273.75	222.00f	......	......	41.50	59.00	40.00	33.50	30.00

•† F.o.b. yard Roxbury. •a Smooth. •b Per 50 lb. bags. •c 6 x 12 x 12 in.-3 cell. •d Pulverized hot. •e 5%, 10th following month. •f 8 x 8 x 12. •g 8½ x 8 x 12. •h F.o.b. trucks, job site N.Y.C. •j Truck load or over. •k $1.00 discount. •l Red face. •m Per bbl., 180 lb. •n 7¾ x 7¾ x 12. Speed title. •p Truck lots. •q Provincial and Municipal tax extra. •r Not used because of earthquake danger. •s 2% discount for cash. •t 5½ x 8 x 11¼. •u Tax exempt. •v Sand lime. •w 5 x 8 x 12. •y Stacked. •z Pebble lime price per 80 lb. sack. •aa Price per sack. Lime not sold per ton. •bb LCL. •cc Truck delivery. •dd 6 x 12 x 12. •ee Pebble lime. •ff 80% common. •gg Rough. $40.00 Smooth. •hh lcl. § F.o.b. yard •** Warehouse delivery. •* F.o.b. plant Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases in oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$18.25	$28.275	$3.59	$3.86	$3.31	$3.00	$2.81	$2.81	$0.60	$55.00
Baltimore	18.00	27.90	2.75	4.25	3.35	2.78	4.25	4.25	48	50.18
Birmingham	18.25	28.275	3.90	3.40	....	2.78	2.55	2.55	75ff	33.50ee
Boston	18.00	27.90	....	....	....	2.86g q	2.66og	2.66og	45g	50.50g
Chicago	18.00	27.90	....	....	....	2.77‡u	2.65‡o	2.65‡o	43.50‡bbr	50.50‡
Cincinnati	1 .00	27.90	....		....	2.88	2.60	2.60	55y	49.36
Cleveland	18.00	27.90	2.34pgg	2.58gg l	2.70gg	2.53q	2.28o	2.28o	43y	44.00hh
Dallas	18.25	28.65	....	4.05	....	3.50q	3.78o	4.35o	.36	58.50hh
Denver	18.50	28.40	3.29	5.15	3.04	2.53	1.90o	2.60o	.48ff	45.00
Detroit	18.00	27.90	2.35	3.25	2.50	2.53	2.28f	2.28f	55	46.00
Kansas City	18.00	28.65	3.64	3.12yz	2.76	2.89	2.68o	2.68o	44	64.33
Los Angeles	18.00	28.15	3.30n	4.50n	4.20n	3.10n	2.25xn	l	64ny	l
Minneapolis	18.00	29.88/28.02			....	2.53dd	2.28hidd	2.28hidd	48idd	44.00v
Montreal	......	21.95	4.65Dff	5.50Eff	4.30Fff					
New York	18.00	27.90	....	....	....	2.53G	2.28Go	2.28Go	48Gs	44.00*
Philadelphia	18.00	27.90	3.60	3.40/3.65	3.50/4.60	2.54	2.94	2.94	.37	26.00
Pittsburgh	18.00	27.90	3.10	3.36	3.68	2.72	2.60o	2.60o	42	52.00
St. Louis	18.00	27.90			....	2.70	2.30h	2.30h	52y	51.25
San Francisco	18.00	28.15	2.95	4.15	3.40	2.62	1.75**	....	44	.....
Seattle	18.00	28.40	3.09mcc	3.67mcc	....	3.42mqcc	2.91hmcc	....	55mcc	52.00mcc
Toronto	......	......	....	....	....	4.45	4.10	....	1.60	80.00

•‡ Delivered. • Note: Red lead in oil 50¢ higher than white lead in oil. •a Red lead prices change frequently due to pig lead price changes. •b U. S. War Dept. Spec. 3-49A. •c ASTM Spec. D266-31. •d 80% minimum ferric oxide. •e 15 lb. •f Per 432 sq. ft. •g F.o.b. yard, Roxbury. •h Per roll, 65 lb. •i Net carload lot prices; Minneapolis and vicinity. •k Per cwt. •l Not used. •m 1% discount for cash. •n F.o.b. city. •o Per 60-lb. roll. •p 6-drum. 50 gal. ea. •q Per 90-lb. roll. •r F.o.b. factory, Chicago. •s 466 Med. •t Federal tax included, add 5% mun. & prov. tax. •u Per 90-lb. square. •v Per ton. •w Price to large paint contractors is $1.25 less. •x Mineral surfaced. •y 55-gallon container. •z Drums. •aa 15. 324 sq ft roll •bb Roofers coating and cement; Price per ton. •cc LCL, truck delivery. •dd 2% cash discount. •ee Asphalt pitch in 100 lb. package. •ff 5-gal. drums. •gg F.o.b. factory. •hh Incl. freight. •D Std. Black. •E Ready-mixed. •F Over 80% ferric oxide. •* Aver. wt. approx. 425 to 550 lbs. drums. •G Freight absorbed to destination not over .35 cwt.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete AGGREGATE l Treated	Untreated	ALUMINUM SHEET h Flat i .102" th 36"x96" & 48"x144" per lb t	Corr roof .032" th 35"x12" per sh u	STAINLESS STEEL SHEET*-TYPE 302g 20 ga 48"x96 120" per cwt hh	28 ga 36"x120" per cwt mm	COPPER WATER TUBING-TYPE L 2000 ft lots per ft a ⅝" b	¾" c
			per bag of 4 cu ft	per bag of 4 cu ft	per bag of 4 cu ft	per bag of 4 cu ft						
Atlanta	$31.50	$38.00	$1.50*	$1.60*	$1.80*		$0.359n	$9.04n	$53.68*	$61.18*	$18.57f	$31.93f
Baltimore	22.85	33.25	0.95	1.15		$1.15	0.391	0.427r	56.25	64.25	0.21	0.30
Birmingham	38.00	43.00	1.55	1.55	1.80		0.437	9.07	55.68	65.68	0.2809	0.3193
Boston	22.00	29.00	1.15/1.20	1.18/1.23		1.30	0.44p	26.15op	55.81dd	61.585ddff	0.1857	0.2609
Chicago	26.80	26.80	1.55	1.60	1.60		0.43o	8.892#p	57.55#ee	65.55#ee	0.1857	0.2609
Cincinnati	21.60**	21.60**	1.75	1.75	1.85	1.75	0.400	8.66	57.60	69.30ff	0.1857	0.2609
Cleveland	27.50	42.00	1.07	1.14	1.24		0.415aa	8.66	57.81	65.81	19.00f	32.00f
Dallas	29.80	31.80	1.20	1.25	1.30		0.379	0.439r	55.00	63.00	0.1449	0.2029
Denver	24.00	24.00	1.45	1.35		1.50	0.437	8.89	57.67gg	67.87gg	0.2107	0.2960
Detroit	25.00	25.00	1.32	1.33	1.42	1.42	0.415	8.780	57.80	65.80	17.00foo	29.83f
Kansas City	30.00	35.00	1.20	1.30	1.40	.....	0.416	9.94	60.72ee	68.72ee	21.34f	29.99f
Los Angeles	26.20	27.20	1.25ss	1.20ss	1.45ss	1.25ss	0.44	8.14	58.00	66.00	0.1857	0.2609
Minneapolis	31.00	31.00	1.45	1.60		1.80	0.43	7.85	56.56	64.31ff	0.1881d	0.2644d
Montreal	28.80	33.20	1.00	1.30	1.35	1.30	0.372	8.25	62.75		0.26	0.320
New Orleans	35.00	40.00	1.50	1.20	1.25	1.25	0.388	0.366aabb	58.18	66.18	0.2134	0.2666
New York	23.00	29.00	1.25	1.20	1.40	1.30	0.43#oz	8.50#	58.42	66.42	49.51f	27.45f
Philadelphia	23.25	32.00	1.35	1.35	1.35	1.40	26.50#wz	7.55#	53.23#	60.98#	18.57f	26.06f
Pittsburgh	27.50	31.00	1.30	1.30	1.37	1.32	0.42	9.19	56.81	62.63	0.2045	0.2572
St. Louis	31.00	40.00	1.30	1.55jj	1.60jj	1.50	0.45ao	8.89e	56.79kk	75.79kk	18.57fm	26.06fm
San Francisco	27.85	27.85	1.05	1.05		1.24	0.414	8.45cc	64.40	72.40	0.1881	0.2644
Seattle	33.00	36.50	1.45	1.25k	1.85		0.388	7.569	60.50ee	68.00ee	0.1881	0.2644
Toronto	32.50	42.00	1.20	1.30	1.45	1.35	0.394	21.55	58.80	92.40	0.3131pp	0.3957pp

† trucklots, delivered • carload delivered •a fob city •b ½" O.D. •c ⅝" O.D. •d 10M ft & over •e 2 10M ft; 10M ft & up $0.1925 ft •f per 100 ft •g 5 tons & up; cold roll, anneal & pickled; 2B finish •h 15M lb •i 3003 alloy; 1100 alloy: $0.456/lb •j 1100 & 3003 alloy, mill finish •k per bag of 3 cu ft •l treated has air entraining agent; untreated does not •m 2 10M ft •n fob plant, fr allow •o 5M lb & up •p 100 sq ft quantity •q 2M lb quantity •r per lb •s 30¢ bag •t 36" x 96; 10.81 lb/sh; 48" x 144":21.7 lb/sh •u 19.31 lb/sh •v in 4M-lb skids; $0.296 lb in 1M-lb cases •w 48" x 144" •x 36" x 96" $13.25 sh •aa 16M lb & up •bb fob mill •cc 26" x 6 12 •dd add $0.75 cwt for boxing •ee 4 tons & up •ff 26 ga •gg add $2/cwt boxing; $0.75/cwt on skids •hh Theoretical wt for 48" x 96"; 50.4-lb, per sh •ii 300-bag lots •jj per 100-lb bag •kk mill shipment; add $2 per cwt for immediate del •mm Theoretical wt 19.7-lb per sh •nn Deliv, warehouse means •oo ¼" O.D. •pp Incl 10% sales tax

U.S., foreign power needs will benefit as . . .

Atom Offer Sparks Reactors

President Eisenhower last week approved a $500-million Atomic Energy Commission proposal that may touch off a wave of reactor-building programs in smaller foreign nations that need cheap power badly and open up broad new markets for American-made nuclear power plants.

The Chief Executive's plan calls for the U. S. to sell or lease a total of 20,000 kg of nuclear fuel to friendly foreign nations. This is enough for power plants to produce at least 5,000,000 kw of electricity. And, U. S. reactor builders have been guaranteed they will receive at least the same amount.

Until now, U. S. industry has been promised all the nuclear fuel it needs to build commercial size nuclear power plants and other atomic facilities. But foreign nations, in the past, have been limited to six kilograms of U-235 each—only enough to power small, research reactors.

For an idea of the scope of the new plan, the U. S. reactor program that is now under way offers a convenient yardstick:

- Seven large, central station nuclear power plants are under construction or planned—financed chiefly by private funds. Five of the sponsors have applied for licenses; one is building under contract; and the other is expected to submit its request for a license soon.

Together, the six plants proposed for licensing will have a capacity of at least 725,000 kw. They will use, according to preliminary engineering designs now available, a total of 2,304.7 kg of U-235. Cost of this fuel will be $57.6 million, based on the announced price of $25 per gram for fuel to be sold overseas under the "Atoms for Peace" plan.

- The AEC is running experiments on 10 small research plants. Total fuel requirement for the 10 plants is 287.89 kg of U-235. Cost of the U-235: about $7.2 million.

- Seven new applications for licenses have come in from rural electric cooperatives, cities and one university. Total power represented will be between 96,500 kw and 111,000 kw. Quantity of fuel needed hasn't been estimated yet. But it's almost certain that these plants would add less than 1,000 kg to the total demand for U-235.

From this, it seems that qualified foreign governments can get enough refined atomic fuel under the program to support a total power program of 5,000,000 kw or more. This could be a boon to power-short areas of the world.

And, the amount of fuel being offered, gives the foreign power plant designers more latitude in planning their reactors. The reason is that under previous restrictions, the promise of atomic fuel from the U. S. was so restricted that prudent foreign designers explored only the most economical reactors, because they could not afford to waste time with reactors that would burn more atomic fuel than the countries could get.

Now, the designs can be made on the basis of efficiency and the particular local needs.

A few days after the Eisenhower plan was announced, one AEC commissioner, Thomas E. Murray, came up with a startling proposal of his own. He told the Joint Congressional Atomic Energy Commission that the U.S. is engaged in—and is losing—a nuclear power race with the Soviet Union.

Murray urged the U. S. to spend a billion dollars a year for the next five years to accelerate construction of nuclear power plants here and abroad. This would be the first stage of a two-pronged, government and private enterprise venture.

Under the governments's part of the program, atomic power plant capacity would be added here and abroad to a total of 2,000,000 kw by 1960. Then, from 1960 to 1965, with the benefit of the government know-how, private enterprise presumably would be able to build another 10,000,000 kw of capacity.

But Murray's proposal isn't given much chance. Other AEC commissioners are cool to the idea. And congressmen are leary of such a heavy investment, coming on top of the $2 billion a year the U. S. currently is spending for its atomic energy program.

Canada Goes to England for Pipe

First shipment of steel pipe for West Coast Transmission Company's $152-million Peace River natural gas pipeline arrived in Vancouver, B. C., from England in mid-February. This is the first consignment of a total of 90,000 tons of 30-in. dia pipe moving out of the mills of South Durham Steel & Iron Company of England, under one of the largest contracts ($15 million) that has ever been awarded to a British firm by a Canadian company.

No Money Problem

Mortgage bankers' head sees good housing year

Construction in general and homebuilding in particular should have a good year in '56, according to Lindell Peterson, president of the Mortgage Bankers Assn. of America.

Peterson told a midwestern mortgage conference last week that, "What we may have in the making is a year in which house building activity is patterned a good deal along the lines of 1954—a slow start and a strong finish."

He added that some decline from '55 can be expected. But this may offer some benefits, according to the mortgage banker. He told the mortgage conference that a slight slowdown in housing activity will "relieve pressure on the materials supply and materials prices . . . and it will relieve any remaining danger of credit inflation."

• **Money supply improves**—For those worried about lack of mortgage money to maintain a high level of homebuilding, Peterson had some encouraging words. He told the conference that a change is taking place in the mortgage market and that "the worst of the congestion that characterized the market last fall appears to be over."

Because the market is no longer badly congested, Peterson said there is less tendency to drop loans into the hands of the "discount seekers." And, he added there is "a gratifying increase in the flow of savings in savings associations, mutual savings banks and life insurance companies."

• **Savings banks boost investments**—Peterson's observations were supported in part by the latest report from the nation's 527 mutual savings banks—a potent factor in the mortgage market and a prime source of funds for homebuilding.

During the month of January, deposits in the mutual savings banks increased by $139 million to reach a new, all-time high of $28.3 billion.

More significant to the construction industry, however, was the jump in mortgage holdings. The savings banks increased their holdings by $192 million in January. And, while that was important to the homebuilding industry, investments of $38 million in corporate securities and municipal bonds also aided other types of construction.

As of Jan. 31, mortgage holdings of the mutual savings banks totaled $17.5 billion, as against $15 billion a year ago. At the present time, 55.4% of the mutual savings banks assets are tied up in mortgages. This is nearly 5% more than a year ago. When the percentage was estimated at 50.5% mutual savings banks sometimes pick up a larger share of the mortgage market when insurance companies reduce their holdings.

Owners Rebuked

Right-of-way too costly, state drops road project

The high cost of acquiring rights-of-way for highway projects, a mounting problem across the nation, was underscored last week when the Maryland State Roads Commission abandoned proposed dualization of a section of a road because property owners wanted too much money for their land.

The commission planned to dualize Old Bladensburg Road between Viers Mill Road and Georgia Ave. But property owners along the right-of-way asked prices running as high as $5 a sq ft.

Other projects will be abandoned in the future when land costs are considered out of line, the commission said. In a formal statement, the group commented:

"The Commission will not pay excessive and unrealistic prices for rights-of-way. Rather than spend the state's money in such manner we are prepared to temporarily abandon certain desirable projects until land values requested are brought in line with comparable prices in the neighborhood in the same general zone classification."

Most of the land involved in the dispute was zoned for residential use.

Court Upholds Sales Tax

Maryland's Court of Appeals has ruled that a builder must pay sales tax on items used in construction even though the materials involved do not become a part of the finished structure.

Among the items specifically affected by the court's ruling are lumber used for concrete forms; nails and hardware used in the forms; acid used to clean bricks; fuel used for temporary heating; progress photos, and special bits for small tools.

Parking Plan

City studies proposal for creating 48-block district

The San Diego, Calif., City Council is studying a proposal by a group of businessmen for creation of a 48-block district under the California Parking District Act. The plan calls for construction of four parking buildings in the downtown area at a total cost of $5.6 million.

While the Parking District Survey Committee has been at work on its four-building plan for more than a year, legality of the state's 1951 Parking District Act was finally decided by the courts only this month.

The plan calls for two five-level buildings, one four-level building and one two-level building. Together they would contain a total of 1,562 parking spaces in which drivers would park their own cars by use of ramps.

A revenue bond issue would be used to finance the project. The bond issue would be retired by: (1) Parking fees for use of the new garages; and (2) an increase in parking meter fees in the district, with 45% of the net meter revenues going to the district.

Metals Expansion

Reynolds to boost output of Texas alumina plant

Reynolds Metals Co. will spend $25 million to $30 million for immediate expansion of its La Quinta alumina plant at Corpus Christi, Texas, the firm announced last week.

The expansion will result in a 50% increase in the plant's present 1,000-ton capacity. It is part of a $43-million program which will also include additional facilities at the aluminum sheet rolling plant at Sheffield, Ala.

The company is increasing alumina production to supply the new 200,000,000-lb aluminum reduction plant to be built adjacent to Reynolds' present northern Alabama operation. Biggest customer for metal from the aluminum reduction plant will be the Ford Motor Co. Reynolds has a contract to deliver 640,000,000 lb of primary aluminum to Ford over the next 10 years.

Reynolds also reported that it will spend about $13 million for the additional facilities needed for the aluminum sheet rolling mill at Sheffield.

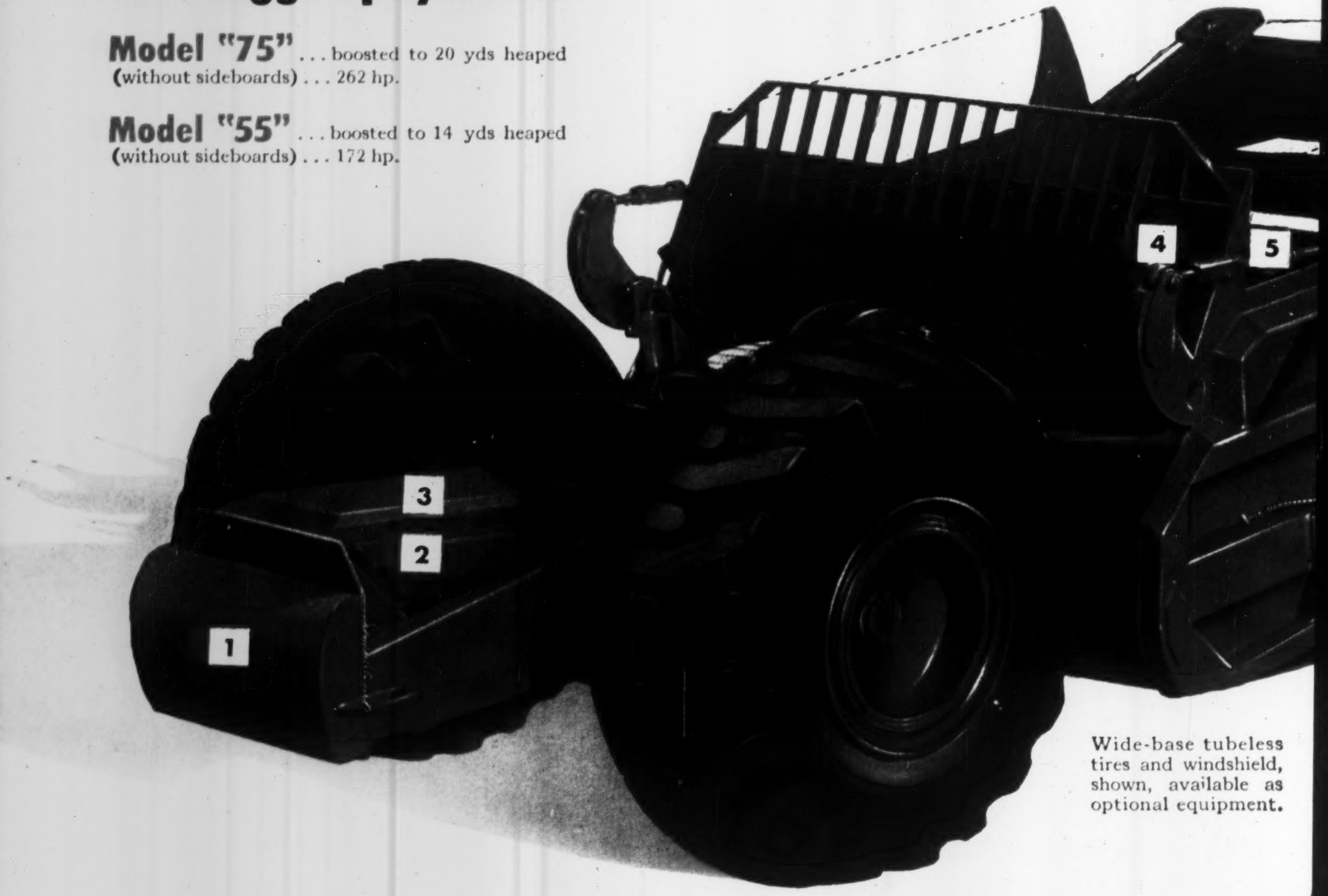
(B&F continued on page 80)

NOW *bid beating... dirt heaping...* 1956

10% bigger payloads!

Model "75" ... boosted to 20 yds heaped (without sideboards) ... 262 hp.

Model "55" ... boosted to 14 yds heaped (without sideboards) ... 172 hp.



Wide-base tubeless tires and windshield, shown, available as optional equipment.

1 **Wider "Target" Push-Block** makes it easier to make and maintain contact. Helps to cut loading and cycle time.

2 **Straight-Line Ejector Reeving** requires minimum power; leaves more power on Payscraper wheels for faster dumping and spreading. Also speeds re-threading time.

3 **Sturdy Cover Plates** protect new, stronger cylindrical ram and air tanks.

4 **New, Straight-Back Bowl** lets you heap and haul more dirt every trip. Struck capacity, ***with sideboards***. 18 cubic yds on "75"—12 cubic yds on "55".

5 **Higher Apron Lift,** bigger apron opening, provides cleaner, more rapid dumping, especially of "sticky" materials.

6 **Fast-Acting Apron,** arms mounted outside bowl, assure quick, positive closing of apron. Payscraper holds the load from cut to fill.

7 **Lowered Draft Frame** provides operator with "control tower" visibility of bowl and push-tractor ... also helps direct push and pull power more efficiently to cutting edge for faster loading.

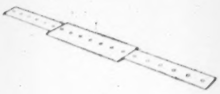
8 **Larger, Wider Fenders** give greater safety for operator, greater protection for machine.

International Payscrapers®

Put the 1956 International Payscraper to work on your job, and watch dirt boil up into its new, straight-back bowl. You've never seen any big scraper load as easily or as fast. In seconds, you've packed in up to 23 heaped yards. Its offset 3-section blade breaks the ground like a sharp-pointed spade. Dirt boils from the smooth-slicing cutting edge and fills the corners to build a full heaped load. Close the apron instantly, positively, on this huge, well-compacted load and you carry all the dirt you've heaped in.

Now, drive easily, effortlessly with safe hydraulic power steering at a fast clip to the fill. Note how the 1956 Payscraper's extremely high ratio of horsepower to capacity and its rapid acceleration to 24 mph top speed add up to more trips per hour than any other self-powered scraper you've ever used. Yes sir, it's a real profitable dirtmover, this 1956 Payscraper! Try one yourself on your job! See your International Industrial Power Distributor for a demonstration.

Maximum 52° Oscillation
from right to left takes the stress and strain out of hauls over furrows, rough ground.



Adjustable 3-Piece Cutting Edge
for clean, fast cutting and loading under all soil conditions.

New, Long-Lasting Clutch
of ceramic material and powdered metals, successfully resists heat and wear over longer periods. Available on Model 75 only.

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INTERNATIONAL HARVESTER COMPANY, 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Tractor and Rubber-Tired Loaders . . . Diesel and Carbureted Engines . . . Farm Machinery . . . Motor Trucks.

$220-Million Residential Development

First of 15,000 units are taking shape at Colorado Springs; industrial area, shopping centers will be added later

The first dwellings and a country club building are starting to rise in a projected $220-million residential development east of Colorado Springs, Colo.

A 5,000-acre area between Colorado Springs' eastern city limits and Peterson Air Field (the municipal airport) is being developed by Valley-Hi Development Corp. The directors of the firm, Edwin W. Hayes, Roy L. Pring, Willett Pring and Leon H. Snyder, already have made their mark in the Colorado homebuilding field. They developed the 500-home Sky Way Park Development in Colorado Springs and the 700-home Security Park project seven miles southeast of Colorado Springs.

The Valley-Hi development will sprawl over an area 3¾ mi long and 2½ mi wide on land previously used for farming and ranching.

As in the other developments, developers of Valley-Hi will not build all of the units themselves. At the start, 10 to 15 builders will build sections at a rate of about 700 homes a year.

The project originally was scheduled for completion in "12 or 14 years but may easily be done before then," according to Hayes.

"Somewhere between 50% and 60% of the project will be completed by 1960 and all of it by 1965 in all probability," he said.

The Air Force Academy at Colorado Springs, plus the expansion of Fort Carson, a permanent Army base, provide the main impetus for the project. And, the Continental Air Defense Command headquarters are located nearby at Dent Air Force Base in Colorado Springs.

• **Home prices will vary**—An 800-acre tract near Peterson Field has been set aside for future industrial development. This industrial area will play a part in determining the selling price of the homes.

Near the industrial tract, the homes will cost about $10,000. From that area westward toward Colorado Springs, the sales price of the homes will gradually increase. One section will have homes in the $11,000 to $14,000 bracket; another will feature homes in the $15,000 to $25,000 price range.

The highest-priced homes will be those located in the immediate area of the country club. These homes will sell for $25,000 and up.

Some duplexes, triplexes and other multiple units will be built but there will be no large apartment buildings in the development.

The entire project will eventually embrace 14,000 to 15,000 units, making it one of the largest developments of its kind throughout the entire U. S. (Sharpstown, Texas, is believed to take top honors with a projected 25,000 units.)

• **Shopping areas planned**—Fifty acres have been set aside for one large shopping area, including a variety of shops, retail stores and a business and professional building. Two smaller shopping centers—on four-acre tracts—also are planned.

Water supplies for the mammoth project have been assured from nonmunicipal sources. A 23-mi pipeline is being built to bring water from mountain streams northeast of Colorado Springs. Hayes feels this will more than meet the development's water needs, estimated at 7,000 to 8,000 acre-ft a year.

And, financing of the project is not expected to be any real problem, preliminary approval for the area has been assured from the Federal Housing Administration and the Veterans Administration.

Hydro Power

Alcoa subsidiary seeking FPC license for new dam

Carolina Aluminum Co., of Badin, N. C., a subsidiary of the Aluminum Company of America, has applied to the Federal Power Commission for permission to build a $13.8-million dam and hydroelectric plant on the Yadkin River, eight miles upstream from Badin.

If the project is approved by the FPC, Carolina Aluminum plans to modernize its Badin smelting plant at an additional cost amounting to $20 million.

The new dam, which would be known as the Tuckertown Dam, would be 80 ft high and 1,255 ft long. It would back up a reservoir nine miles long and covering about 2,560 acres in Stanley, Montgomery, Davidson and Rowan Counties.

The company already has three dams on the Yadkin River, at High Rock, Yadkin Narrows and Yadkin Falls. The existing hydro plants generate 134,500 kw of electricity. The proposed Tuckertown plant, which would have three generators, would produce 40,000 kw.

The FPC license sought by the company would permit Carolina Aluminum to complete development of hydroelectric resources along the 30-mi stretch of the Yadkin River that the company uses.

Weyerhaeuser, U.S. Plywood Report New Spurt in Sales

Two more major construction materials suppliers, Weyerhaeuser Timber Co. and U. S. Plywood Corp., have established new records for sales and earnings.

For U. S. Plywood, consolidated sales during the nine months ended Jan. 31 added up to a resounding $149.3 million, highest in the company's history.

Weyerhaeuser's net sales for 1955 totaled $324.4 million, about 17% higher than the previous high for the company, set in 1953.

$95,000 Separates Bidders On $17-Million Hospital

Two nationally-known construction firms, John McShain and Turner Construction Co., turned in a photo-finish in competing for a $17-million-plus hospital project which is to be built in Baltimore, Md.

McShain submitted the low bid of $17,100,000, only $95,000 under the $17,195,000 Turner bid for the Jewish Medical Center and Sinai General Hospital project.

The center and hospital are joint owners of the project which includes an obstetrical and gynecology building; nurses' home and school-service building; staff headquarters, research building and alternations to the Mt. Pleasant Tuberculosis Sanitorium.

Motor City in High Gear

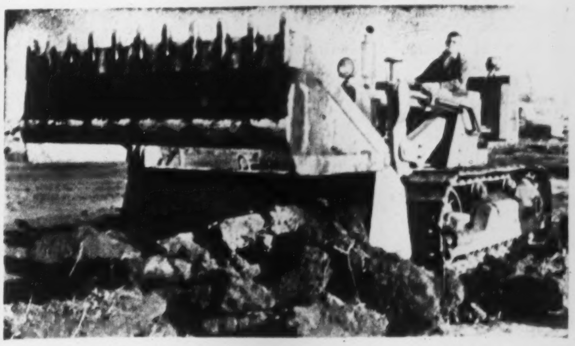
The Detroit, Mich., metropolitan area will need 720,000 new housing units during the next 20 years, according to Edmund Kuhlman, president of the Detroit City Plan Commission. He estimated 22,000 units a year for normal growth of the area, 8,000 annually for "accelerated growth" and 6,000 units a year for replacement of units in redevelopment areas.

How to beat a fleet of limited-duty rigs
... WITH ONE
International® Drott 4-IN-1

Beat a power shovel wherever exclusive Drott *triple-power, pry-action break-out* is decisive—and where quick International crawler mobility can out-speed and "out-reach" a boom. Break-out force of the three Four-In-One models as Skid-Shovels ranges from 8,500 to 17,000 lbs!

Gain a 30-inch (or greater) dumping height advantage over ordinary roll-forward bucket dumping—by using the bottom-dump feature of the Four-In-One as a clamshell. And loading with the clamshell action, get a super-fast bucket-fill on stockpiled materials, even in cramped quarters.

Get versatile carry-type scraper action with the Four-In-One in Bullclam position. Using positive clam lip control, spread materials, strip, and grade with amazing accuracy. And as a Bullclam, the Four-In-One *heap-loads* itself with speedy, earth-boiling action!



Get big dozing capacity with finger-tip ease with your Four-In-One in bulldozer position. Regulate dozing depth by hydraulic "radius control" of blade pitch. Note the frost-breaking, earth-moving action. Shown here is new 2¼-yard Four-In-One for the International TD-14.

Prove Four-In-One versatility unlimited with the 1-yard TD-6, the 1½-yard TD-9, or the new 2¼-yard TD-14 model. Test *exclusive* pry-over-shoe break-out action, and *exclusive* shock-swallowing Hydro-Spring. Ask your International Drott distributor for a Four-In-One demonstration.

4 1

International Harvester Company, Chicago 1, Illinois

INTERNATIONAL HARVESTER

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Peace Talk Fails

Union security kills hope for industrial peace plan

Top-level efforts to find a labor-management peace formula failed again last week because of the deep seated conflict over the controversial issue of right-to-work legislation.

The failure occurred in Washington, D. C., where George Meany, AFL-CIO president, and Charles R. Sligh, Jr., chairman of the National Association of Manufacturers' executive committee, met to explore the possibility of a new approach to industrial peace. Meany had suggested the idea to NAM shortly after the AFL-CIO merger in December and had advanced it again when he addressed a meeting of the National Industrial Conference Board in January.

First of the four points on the Meany-Sligh agenda was union security. Sligh's position was that workers should have freedom of choice between union membership and nonunion membership. Meany said the AFL-CIO has "no quarrel" over the right to join or not to join a union but it does ask that a union man have the right to refuse to work alongside a nonunion man.

Eighteen states now have right-to-work laws, which generally provide that union membership cannot be made a condition of employment—whether the condition is imposed by contract or some indirect means. These laws are passed under a Congressional dispensation, contained in Section 14 (b) of the Taft-Hartley Act, that leaves it up to the states to decide whether to oulaw union membership as a condition of employment. Where not outlawed, a union contract can require a new employe to join the union after he's been employed for 30 days.

In looking forward to a new high-level formula for industrial peace, Meany has asked that its evolution be based on "cooperation" and on "a real understanding on the part of management of the objectives, ideals and principles of the trade union movement."

Meany defined what he meant when he addressed the NICB members in January. After outlining the general achievements of the trade union movement, that have benefited both union and nonunion members, he said: "It is my deep belief that, alongside of their expressed position on the rights of workers to join or not to join a union, management should give equal recognition to the right of the union worker who actively contributes to the advancement of labor standards . . . to refuse to work alongside the man who will not join the union—who not only refused to share the burden of safeguarding his work standards but also refused to accept any responsibility for discharging the obligations assumed by his fellow workers under the contract agreed to as a result of collective bargaining."

Core of the union argument is that denial of a worker's right not to work where conditions of work are unacceptable to him goes to the heart of union security. And according to Meany the right of workers to maintain free trade unions "is equal and parallel to the right of management to manage." Unless this is recognized, he said, there isn't the mutual confidence and understanding necessary to support a joint effort on the part of NAM and the AFL-CIO to work out a peace formula.

Other questions discussed by Meany and Sligh were strike violence, political activity on the part of unions and ways of strengthening the free enterprise system. Because no agreement could be reached on the crucial question of union security, discussion of the remaining issues was considered academic.

Arbitration Begins

Teamster pension plan is one of the key issues left from West Coast strike

The teamsters union and members of the Southern California Rock Products Association have undertaken arbitration of the issues still unresolved when a three-month teamsters' strike was called off early this year (ENR Jan. 12, p. 84).

Biggest of the issues now before Paul Prasow, the arbitrator, is the type of pension plan to be established for the 1,650 teamsters involved.

The strike, which tied up $700 million worth of construction on the West Coast, was called on Oct. 3 after negotiations for a new contract broke down. One of the union demands was employer participation in the Western Conference of Teamsters' Pension Fund. Although willing to make a pension contribution, the sand and gravel producers refuse to contribute to a fund over which they had no direct control.

When the strike was settled by agreement to arbitrate the disputed issues, the employers agreed to a new contract that granted a 15-cent wage boost—plus an additional 2 cents in fringe benefits—until Oct. 1, 1956. They also agreed to make a 10-cent pension contribution, but the type of plan and the time for the payments to start were left to arbitration. As part of the pre-settlement agreement, it has been stipulated that pension contributions would be subject to a weekly ceiling of $4.00 per employe and that time paid but not worked on holidays and vacations would be treated as time worked for pension purposes.

Prasow now has eleven issues before him. Among them—in addition to the pension question—are these:

- Whether the present contract would be extended beyond Oct. 1.
- What the new wage rates will be if the contract is extended.
- Whether the contract should guarantee employes an eight-hour day and a 40-hour week.

The arbitration agreement provides that Prasow's decision, final as to each of the parties, must be based solely on the evidence and arguments presented by the union and the employers.

Engineering Group Records Objection to Unionization

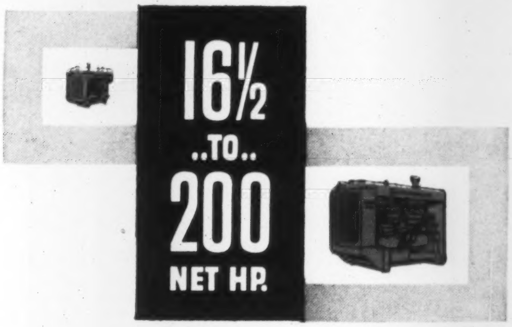
In the continuing debate over the propriety of unionization within the ranks of engineers, one of the nation's leading sounding-board organizations has officially registered its disapproval of union participation.

The executive council of the Schenectady General Electric Engineers' Association has adopted a resolution opposing "inclusion of its members in either an engineering union or a heterogeneous labor union." Designed to serve as a guide for future action, the resolution will be submitted to SGEEA members for approval. The action stemmed, in part, from union plans to step-up membership drives.

Principal points made by SGEEA in support of its stand are these:

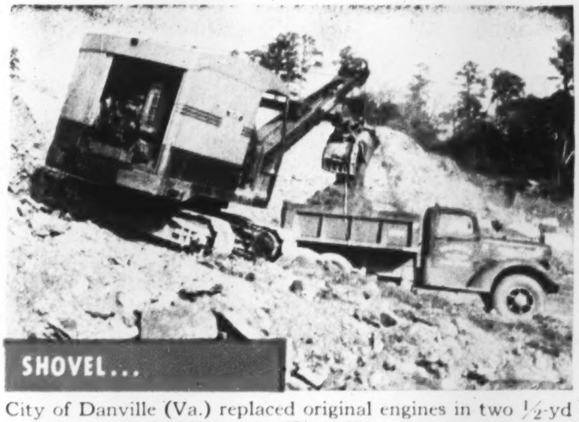
- Union membership is incompatible with professionalism.
- The tendency of unionization is to split the profession into two conflicting factions—nonsupervisory engineers and engineers in management.
- Union participation involves the loss of "a measure of individual freedom."

(*Labor continued on page 84*)



Choose your power from 18 work-proved INTERNATIONAL® UNITS!

Whether you're buying new machinery, or replacement engines, specify the International power unit size that correctly fits your needs—be it for shovel, mix plant, grader, compressor, sawmill, or crusher. Pick the fuel with the local economy advantage! You'll get a heavy-duty unit with the inbuilt tinkerless simplicity of positive temperature control, that features full-length water jackets. You'll get special-delivery pressure lubrication through drilled passages. You'll get wear-defiant, stress-resistant, induction-hardened crankshaft bearings. You'll get the many other International stay-put, extra-value features. You have the choice of 6 diesel, or 12 carbureted work-proved International Industrial Power Units, 16.5 to 200 hp.

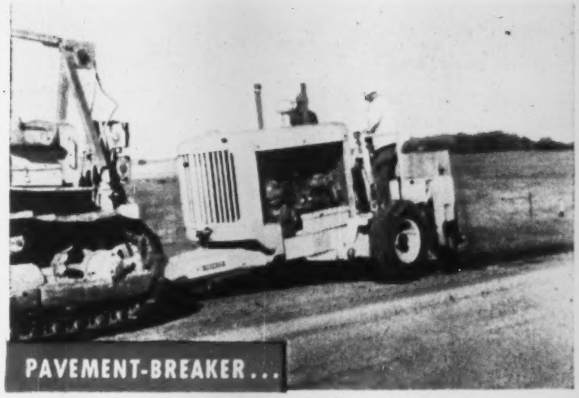


SHOVEL...

City of Danville (Va.) replaced original engines in two ½-yd shovels with 75 hp UD-350's. "These IH engines sure cut operating costs," says Works Director H. Bowling. Each shovel uses only 17 gal of fuel to produce 95 five-yard loads per day.

Your International Industrial Power Distributor or Power Unit Dealer is qualified to recommend and install the correct engine size for your needs—and to provide parts and service on it promptly and competently. A good deal awaits you—see him soon!

International Harvester Company, Chicago 1, Illinois

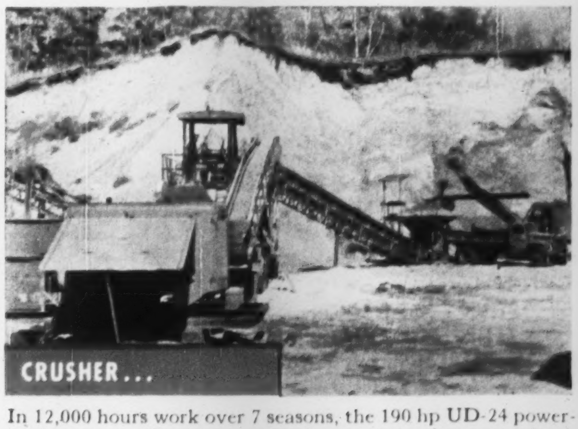


PAVEMENT-BREAKER...

This UD-24-powered preparizer chews up 2 miles of 24-ft pavement per 8-hour day for Contractor G. A. Watson, Barneveld, Wis. He says, "My equipment is International-powered because International engines are dependable, and backed by a company that gives service when needed."

HOT-MIX PLANT...

Nello L. Teer Co, Durham, N. C., powers this hot-mix plant with an International 190 hp UD-24 on the tower, another UD-24 at the dryer, and a 125 hp UD-18A on the fan. Plant output on U. S. Hwy 13 job in Maryland averaged 1,000 tons per 10-hour day.



CRUSHER...

In 12,000 hours work over 7 seasons, the 190 hp UD-24 powering Sheboygan County's crusher has needed only one overhaul. It produces 700 tons of crushed stone per average day. "Most dependable engine we know of," says the pit superintendent.

INTERNATIONAL HARVESTER

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INDUSTRIAL POWER

When steel frames can be simplified . . .

Have more useable space . . . better appearance . . .

Yet erected for less cost . .

WHY shouldn't you design for welding

Ask

THE LINCOLN ELECTRIC COMPANY

Cleveland 17, Ohio

Pioneer in welded structural design . . . for lower cost

More Productivity

Electrical workers attack loafing, stress peace aims

While the president of the electrical workers union was pointing with pride earlier this month to the union's contribution to industrial peace, a Kentucky local of the union was launching a program designed to increase the productivity of its members.

Through an unusual course which it is sponsoring at the University of Kansas City, Local 124 has undertaken a study of on-the-job loafing and how to prevent it. Fifty members—a few foremen and the rest journeymen—have enrolled. The union pays the tuition.

In announcing the program, Andrew Harvey, president of the local, stressed the union's responsibility for "better liaison between the contractor, the foreman and the journeyman on the job." He noted that activity on some projects is a little like that in a convalescent home and said that workers "can't expect to maintain a $3.20 hourly scale without giving good work for it."

On the national level, international president Gordon M. Freeman said his union has helped to build a 35-year strike-free record of labor-management relations. He attributed the achievement to the cooperative efforts of the electrical workers and the National Electrical Contractors Association. Principal credit was given to the Council on Industrial Relations, which represents both the union and the NECA and handles disputes as they arise.

The occasion for Freeman's remarks was a ceremony sponsored by the Reynolds-Newberry Construction Co. in Portsmouth, O., to celebrate completion of a $30-million electrical contract on an atomic energy project. Work was completed without a single labor dispute.

First Three-Year Contract Signed in British Columbia

The first three-year contract for AFL construction unions in British Columbia has been signed by the International Association of Bridge, Structural and Ornamental Iron Workers (AFL-TLC) and three construction firms.

Covering 300 structural workers, the new contract grants a total wage increase of 15½ cents, with the first 5 cents retroactive to Jan. 1. Basic rate, prior to the first increase, was $2.46½.

Firms that negotiated the contract were Dominion Bridge, Edgar Bickerton Bridge and Pacific Steel Erectors.

Elsewhere in British Columbia, reinforcing ironworkers at Kitimat settled for a cash increase after demanding free room and board at the aluminum center. Amount of the increase was reported to be 15 cents. And in Vancouver, reinforcing ironworkers and nine construction firms represented by the General Contractors Association agreed to an 18-month contract that granted a 3-cent wage increase retroactive to Dec. 1, with another 3 cents in June.

Corps of Engineers Proves Multiple Management Value

The Corps of Engineers has announced that it plans to expand its Multiple Management Experiment at the Research and Development Laboratories, Fort Belvoir, Va.

Perhaps the first of its type in government, the program began with the Federal Junior Management Board, organized in late 1954 by Col. H. F. Sykes, Jr., the laboratories director. Its purpose is to develop the latent abilities of a substantial group of middle-grade, nonsupervisory employes who previously had no appreciable voice in the management of the laboratories.

The board serves members as a clearing house for ideas on management, and gives them a chance to exhibit their ability for managerial positions. Through the board's recommendations on management practices, staff members have an opportunity to participate in the formation of both policy and procedure.

One of the principal projects of the board to date has been an investigation of personnel turnover and government morale. Among its results has been the setting up of an effective two-way communication system between management and personnel at all levels and improvement in employe-supervisor relationships.

Hells Canyon Project Has Some State-Line Problems

To which state are miscellaneous employment and withholding taxes paid on construction work that sprawls across a state line?

This question has cropped up again in the $87-million Hells Canyon projects, consisting of two dams on the Snake River along the Idaho-Oregon border. Through conferences with state officials, Morrison-Knudsen, world-wide builders of dams, and the Idaho Power Company have been trying to find a satisfactory solution to the problem.

When construction activity reaches a peak this spring, from 800 to 1,000 men will be employed at the Brownlee and Oxbow sites. They'll be living on both sides of the river and interchangeably working on both sides. If a man who has been working on one side for part of a day is injured while crossing over to the other, which state pays his workmen's compensation? If a bulldozer operator lives on the Oregon side but does most of his work in Idaho, which state receives his income tax? Similar questions stem from unemployment insurance as well as property and electrical energy tax laws.

Idaho Power suggested a system that would apportion each man's pay for tax purposes according to an estimate of how much time he works in each state. This involves a determination of the legal boundary between the two states—the center line of the channel, not the center of the river.

Labor Briefs . . .

• **Unemployment compensation** – A bill to liberalize unemployment insurance benefits—$32 for 28 weeks instead of $28 for 26 weeks—has been killed in Kentucky. Main stumbling block was an industry-labor conflict over tighter eligibility requirements.

• **Wage-hour exemption**—The Defense Department last week urged that the Fair Labor Standards (Wage-Hour) Act be amended to exclude workers on U. S. defense projects around the world from the minimum wage and hour standards of the law. The recommendation was made to a Congressional subcommittee on education and labor.

• **Welfare funds**—In a special message to the New York legislature, Gov. Harriman last week pinned the label, "affected with a public interest," on union welfare funds and asked for passage of a Democratic bill that would bring those in New York—now estimated at $10 million—under state regulation. Unlike a pending Republican bill, the measure would permit the granting of exemptions to qualified funds.

Bids: March 15, 1956

New Jersey Turnpike Authority

CONTRACT NO. PE-6

Proposals are invited for Contract No. PE-6 which involves the installation of roadway lighting facilities, including two transformer stations and other incidental work, all in connection with the construction of the Pennsylvania Extension of the New Jersey Turnpike in Burlington County, New Jersey.

The principal items of work include:

Trenching and Backfilling	38,700 Lin. Ft.
Asbestos-Cement Conduit	48,200 Lin. Ft.
Series Lighting Conductor	60,000 Lin. Ft.
Lighting Standards and Luminaires	194 Units
Transformer Stations	2 Units

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Standard Time on the morning of March 15, 1956, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after February 28, 1956, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
February 23, 1956

Bids: April 2, 1956

Palm Beach County, Florida

SAND TRANSFER FACILITIES AT LAKE WORTH INLET,
PALM BEACH COUNTY, FLORIDA

Sealed bids will be received by the Board of County Commissioners, Palm Beach County, Florida, at the Clerk's Office, up to and opened at 11:00 o'clock A.M., E.S.T. April 2, 1956, for construction of the following project:

SAND TRANSFER FACILITIES AT
LAKE WORTH INLET
PALM BEACH COUNTY, FLORIDA

Drawings and Specifications may be obtained by qualified contractors at the office of the County Engineer, 810 Datura Street, West Palm Beach, Florida or at the offices of Tippetts-Abbett-McCarthy-Stratton, Consulting Engineers, 62 West 47th Street, New York, New York, upon payment of $25.00 for each set; said payment will be refunded to those contractors who submit bids and who return the set in good condition to place of purchase within five days after date for receipt of bids.

The work includes the following principal features:

(1) Pumping station consisting of a permanent type dredge pump installation in a reinforced concrete building designed to withstand storm conditions and to harmonize with the surrounding area.

(2) Two submarine pipe lines across Lake Worth Inlet to carry dredged material to depleted area south of the Inlet.

(3) Flushing equipment to prevent plugging or stoppage in submarine lines.

(4) A groin of concrete capped steel sheet piles to delineate the limits of the pumping area and to protect the public.

A Proposal Guaranty in the amount of 5 per cent of the gross bid will be required as a guarantee that the bidder, if awarded the contract, will within 10 consecutive calendar days after written notice is given of such award, enter into a written contract with the Board of County Commissioners in accordance with the accepted bid, and give a Contract Surety Bond satisfactory to the Board of County Commissioners equal to 100 per cent of the Contract price.

The right is reserved to reject any or all bids.

No bidder may withdraw his bid within 40 days after the date set for opening bids.

By order of the Board of County Commissioners.

PALM BEACH COUNTY, FLORIDA
PAUL RARDIN, Chairman
STEPHEN R. MIDDLETON,
County Engineer

Bids: March 20, 1956

New Jersey Turnpike Authority

CONTRACT NO. N-29 (N-29A, N-29B)

Proposals are invited for Contracts Nos. N-29, N-29A and N-29B which involve furnishing and installing traffic signs and side-of-road delineators, and other incidental work, for the Newark Bay-Hudson County Extension of the New Jersey Turnpike, extending from the Newark Airport Interchange in Newark, Essex County, to the New Jersey exit of the Holland Tunnel in Jersey City, Hudson County, and along short lengths of the main stem of the Turnpike extending north and south from the Newark Airport Interchange.

Contract No. N-29A includes the construction of 20 illuminated signs, and Contract No. N-29B the construction of 153 reflectorized signs and 714 delineators. Contract No. N-29 comprises all the work under Contracts Nos. N-29A and N-29B. If a bidder submits a proposal for Contract No. N-29, he must also submit proposals for Contracts Nos. N-29A and N-29B.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Standard Time, on the morning of March 20, 1956, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after February 29, 1956, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
February 23, 1956

Bids: March 13, 1956

New Jersey Turnpike Authority

CONTRACT NO. N-28

Proposals are invited for Contract No. N-28 which involves the construction of two types of right-of-way fence, namely, chain-link and farm-field fence, and other work incidental thereto, from the Newark Airport Interchange of the New Jersey Turnpike and the area just south of the Interchange, in the City of Newark, Essex County, to Twelfth Street near Jersey Avenue, just beyond the termination of the North Terminal Ramps, in Jersey City, Hudson County, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Chain-Link Fencing, 48" High	7,000 Lin. Ft.
Chain-Link Fencing, 84" High	54,000 Lin. Ft.
Farm-Field Fencing, New and Relocated	21,200 Lin. Ft.
Vehicular Gates	34 Units

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Standard Time on the morning of March 13, 1956, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after February 27, 1956, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
February 23, 1956

Bids: March 8, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 8th day of MARCH 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

Contract No.	County	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y.						
M.T. 56-3	Herkimer	New York State Thruway Mohawk Section, Sub. 10B (Herkimer Maint. Bldg. "G" Site)	....	Grading, Paving and Misc. Work	$1,800 Plans $10	$34,000
M.T. 56-2	Montgomery	New York State Thruway Mohawk Section, Sub. 15 (Amsterdam Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$3,100 Plans $10	$58,000
M.T. 56-4	Oneida	New York State Thruway Mohawk Section, Sub. 4 (Verona Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$3,600 Plans $10	$67,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Bldg., Syracuse, N. Y.						
O.T. 56-1	Cayuga	New York State Thruway Ontario Section, Sub. 5A (Weedsport Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$2,500 Plans $10	$45,000
DISTRICT No. 4, B. F. Perry, District Engineer (Acting), Barge Canal Terminal, Rochester, N. Y.						
O.T. 56-4	Genesee	New York State Thruway, Ontario Section, Sub. 4 (Batavia Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$3,000 Plans $10	$56,000
O.T. 56-2	Monroe	New York State Thruway, Ontario Section, Sub. 9 (West Henrietta Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$3,600 Plans $10	$71,000
O.T. 56-3	Ontario	New York State Thruway, Ontario Section, Sub. 14 (Manchester Maint. Bldg. Site)	....	Grading, Paving and Misc. Work	$1,700 Plans $10	$32,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
NET 56-1 FA NET 56-2 ST 56-3 FAST 56-4 RC 56-1	Westchester	New York State Thruway—New England Section, Sub. Ne 3 (Chatsworth Ave.—Mamaroneck Ave.; Weaver St. Pt 1, S.H 1645 and 7 Secondary Cross Roads Project F-1068(10)	2.49 (3.05 Acc.)	9" Cem. Conc. Pavt. 2 at 37' Var. Wide=4.59 Mi. Asp. Conc. Opt.=0.95 Mi. 8 Hy. Seps. Comp. I-Beam 107.5', 110.2', 109.3' 107', 112.3', 124.5', 120.3' and 202.7' 1 RR Sep. Comp. I-Beam 55.3' 4 Brs. Conc. Boxes 36' 36', 36' & 54'	$420,000 Plans $100	$7,600,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: March 7, 1956

Indiana Toll Road Commission

309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS
Contract T.S.—1

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, March 7, 1956 for the performance of the contract enumerated above.

Contract T.S.—1, Traffic Signs, consists of furnishing and erecting advance guidance signs on the Indiana East-West Toll Road for ten interchanges, ten service areas, and two terminal toll plazas; furnishing and erecting guidance, warning and regulatory signs within interchanges and service areas; furnishing and erecting guidance signs on State Routes approaching Toll Road interchanges; furnishing and erecting mile markers, informational signs and repetitive regulatory signs along the Toll Road. The work is located along the route of the Indiana East-West Toll Road in Steuben, LaGrange, Elkhart, St. Joseph, LaPorte, Porter, and Lake Counties, Indiana.

Copies of the Plans, Standard Specifications, Supplemental Specifications for Traffic Signs and Proposal Forms for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road	$5.00
Supplemental Specifications for Traffic Signs	$2.00
Plans and Proposal Forms	$8.00

All proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid for the Contract. The Proposal Guaranty shall be in the form of an acceptable surety bond or certified check on a solvent bank.

If the Bidder is an out of State corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, March 7, 1956, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above Contract, if any award be made, will be to the Bidder whose Proposal is lowest and best for the performance of the work, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman

Charles W. Keating
Secretary-Treasurer

Bids: March 27, 1956

Water Treatment Plant

ADVERTISEMENT FOR BIDS

Sealed bids or proposals for furnishing materials and labor for constructing a Water Treatment Plant for the City of Ashland, Kentucky, will be received by the City Manager, City Building, Ashland, Kentucky, until eight o'clock (8:00) P.M., Eastern Standard Time, March 27, 1956, when said proposals will be publicly opened and read in the Chambers of the City Commission, City Building, Ashland, Kentucky.

This work will be known as "Water Treatment Plant" and includes the construction of reinforced concrete basins, building substructures, building superstructures, piping, valves, water treating equipment, and filters and appurtenances.

Each proposal shall be addressed to the City Manager, City Building, Ashland, Kentucky, sealed and endorsed "PROPOSAL FOR WATER TREATMENT PLANT."

Each proposal must be made on a blank proposal form for such purpose and must contain the full name and address of each person or company interested. The proposal shall be accompanied by a bond in the sum of ten per cent (10%) of the bid satisfactory to the City of Ashland or by a certified check in the sum of ten per cent (10%) on some solvent bank as a guaranty that if the bid is accepted a contract will be entered into and its performance properly secured within ten days after written notification of acceptance is sent. Proposal bonds shall be accompanied by proof of authority of the official or agent signing the bond together with a recent financial statement of the surety company.

The check of the successful bidder will be returned if the contract is executed and the necessary bond furnished, and to the unsuccessful bidders after award is made.

The City of Ashland, through its City Manager, reserves the right to accept any bid or to reject any or all bids should it deem it to be for the best interests of the City of Ashland, Kentucky.

Plans, specifications, and form of proposal and contract may be obtained at the office of the City Manager, Ashland, Kentucky, or Alfred LeFeber & Associates, Consulting Engineers, 2933 Woodburn Avenue, Cincinnati 6, Ohio, upon deposit of $25.00 for each set of documents, so obtained. The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the City of Ashland, Kentucky, and who also returns the plans and specifications (on additional sets) in good condition to the Engineer within ten (10) days after his bid security has been returned to him.

Equipment manufacturers, sub-contractors, and others who do not submit formal proposals to the City of Ashland, Kentucky, will be refunded one-half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition within ten (10) days after the opening of bids. No refund will be made for documents received after this ten (10) day period.

The City of Ashland reserves the right to hold all bids for thirty (30) days before final acceptance thereof.

CITY OF ASHLAND, KENTUCKY
By: J. P. Brownstead
City Manager

OFFICIAL PROPOSALS

Bids: March 8, 1956

Contract No. 32

DELAWARE INTERSTATE HIGHWAY DIVISION
NOTICE TO BIDDERS
BRIDGE AND ROADWAY MODIFICATIONS
FOR DELAWARE MEMORIAL BRIDGE AND APPROACHES

Sealed proposals for the construction of bridge and roadway modifications along the approaches to "The Delaware Memorial Bridge" over the Delaware River near Wilmington, Delaware, will be received by the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge near Wilmington, Delaware, until 12 o'clock noon Eastern Standard Time, March 8, 1956, at which time and place said proposals will be opened and read.

The work to be performed under this Contract includes the furnishing of all plant, equipment, materials, labor and all else necessary for the construction of (a) installation of expansion joints and the construction of adjoining slab sections in the concrete pavement adjacent to both abutments of the Delaware Memorial Bridge, the Pennsylvania Railroad Overpass, the New Castle Avenue Overpass and the North and West Bridges of the Farnhurst Interchange, and adjacent to the east abutment of the East Bridge of the Farnhurst Interchange; (b) macadam paving of both outside shoulders for certain lengths adjacent to all the abutments specified in (a) above except those of New Castle Avenue Overpass; (c) repair of roadway expansion joints at both towers of the Delaware Memorial Bridge; and (d) repair of the southwest link of the west tower.

Work on Contract No. 32 shall begin promptly after the execution of the Contract and shall be completed on or before June 15, 1956.

Monthly payment will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Division.

Each proposal must be accompanied by an acceptable surety bond or certified check to the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

The Plans and Specifications and other contract documents may be examined after February 13, 1956, at the Administration Building of the Delaware Memorial Bridge in New Castle, Delaware. Contract documents may be obtained from the Delaware Interstate Highway Division upon payment of Ten Dollars ($10.00) for each set. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff. Contract documents need not be returned and the above payment will not be refunded.

DELAWARE INTERSTATE HIGHWAY DIVISION
by: Garrett E. Lyons, Director
W. B. McKendrick, Jr., Chief Engineer
Delaware Interstate Highway Division
February 9, 1956

Bids: March 22, 1956

City of Norfolk, Virginia

ADVERTISEMENT PROPOSAL

Sealed bids will be received by the Department of Public Works, City of Norfolk, Virginia, until 12:00 noon, March 22, 1956, for the cleaning and relining of approximately 12,000 feet of 20-inch cast iron water main, and approximately 42,000 feet of 16-inch cast iron water main extending from the City of Norfolk along the Virginia Beach Boulevard to the Laskin Road Overpass.

Plans and specifications may be obtained from the Office of the Director of Public Works, City of Norfolk, Virginia, upon a deposit of $25.00 for each set.

S. C. MORRISETTE
Director of Public Works
Room 203
City Hall Building
Norfolk, Virginia

U. S. Government

Invitation for bids (Construction Contract) Date, February 3, 1956. Name and location of project, Project number 53-106R Waterfront Roadway, St. Thomas, Virgin Islands. Department or agency Government of the Virgin Islands by (issuing office) department of Insular Affairs, Division of Procurement and Supply, Charlotte Amalie, St. Thomas, Virgin Islands. Sealed bids in single copy for furnishing all labor, equipment, and materials and performing all work for the project described herein will be received until 3:00 P.M., Atlantic Standard Time, March 28, 1956 in the Department of Insular Affairs, Division of Procurement and Supply, Charlotte Amalie, St. Thomas, Virgin Islands, 75 Kronprindsens Gade, (opposite of the Catholic School.) and then publicly opened. Information regarding bidding material, bid guarantee, and bonds, plans and specifications and other contract documents are open for public inspection at the office of the Public Works Commissioner, Charlotte Amalie, St. Thomas, Virgin Islands; R. L. Kenan & Associates, Consulting Engineers, Bell Building, Montgomery, Alabama; Lester M. Marx, Deputy Public Works Advisor, Office of Territories, Department of the Interior, Room 2713, Interior Building, Washington 25, D. C.; A.G.C. Office, 1113 Congress Building, Miami, Florida; Builders Exchange, 46 Northeast 6th Street, Miami, Florida; Urban Renewal Administration, 2nd Floor, del Valte Building, Santurce, 17, Puerto Rico; and F. W. Dodge Corp., 119 West 40th Street, New York 18, N. Y. Plans and specifications may be procured from the Office of R. L. Kenan & Associates, Consulting Engineers, Bell Building, Montgomery, Alabama, upon deposit of $20.00. Deposit shall be only by certified check payable to R. L. Kenan & Associates, which will be refunded to bona fide bidders upon the return of plans and specifications in good condition within sixty (60) calendar days from the date of bid opening. A bona fide bidder includes any person who submits a bid for a general contract, but does not include a person who submits a quotation to the general contract bidders. To persons who procure plans and specifications upon payment of $20.00 and who do not submit a bid, $15.00 will be refunded upon the return thereof in good condition within sixty (60) calendar days from the date of bid opening. No refund will be made for return after that time. After the bid opening additional copies of plans and specifications may be obtained from the Consulting Engineers at commercial rates, plus handling and mailing charges. Bonds, etc. Each bid must be accompanied by a satisfactory bid guaranty in an amount not less than 5 per cent of the total bid. The successful bidder will be required to furnish a performance bond and payment bond, each in the amount of 100 percent of the contract price. No bid may be withdrawn until forty-five (45) calendar days after the scheduled closing time for the receipt of bids. The Government of the Virgin Islands reserves the right to award a contract for any or all items of any bid, whichever course is in the best interests of the Government of the Virgin Islands. Description of Work. The construction of a roadway approximately 7,830 feet long along the seawall in Charlotte Amalie harbor which includes: 13,500 C.Y. common excavation, 4,700 C.Y. solid rock excavation, 1,434 L.F. culvert pipe, 38 Ea. roadway inlets, 12,900 L.F. standard combination curb and gutter, 280 C.Y. rubble masonry curb wall, 2,460 S.Y. grouted riprap, 6,330 S.Y. concrete sidewalk, 25,700 S.Y. dry macadam base course, 25,700 S.Y. 2" bituminous surface, 4 Ea. comfort stations (toilets), lighting. With Alternates: 25,700 S.Y. stabilizing subgrade, 25,700 S.Y. concrete paving.

Government of Iraq, The Grain Board, Ministry of Economics. Construction of Concrete Grain Silos and Appurtenant Works at Arbil, Iraq. The Iraqi Grain Board, invites tenders for the construction of a concrete grain silo and appurtenant structures at Arbil, Iraq, all in accordance with the specifications, schedules, drawings and addenda covering the work. A unit price type of contract covering all the required work will be awarded to the successful tenderer. The work to be performed includes but is not limited to the following: 1. Concrete Grain Silo of 8,300 ton capacity complete with working house. 2. Housing units for 20 employees and their dependents. 3. Site improvements including railroad spurs, access area paving, electric, water and sewer lines, grading and walkways. A combination tender for the silos at Arbil together with both silos at Hillah and Mosul (contract documents for these projects have been available since 31 December 1955) will be permitted. In our call for tender for Hillah & Mosul Silos we had stated that Arbil silo which was pending shall be identical with that of Hillah except with respect to foundations and site arrangements. Copies of the Arbil documents for tender may be inspected at the following addresses on or after 10 February 1956. a) The office of the President of the Grain Board at Abu-Nawas Street, Baghdad. b) Iraqi Embassies in Washington, London and Paris; and Iraqi Legations in Bonn, Brussels and Rome. Copies of the Arbil documents for tender may be obtained on or after 10 February 1956 upon the payment of ID.35/—or the equivalent per copy at: a) The office of the President of the Grain Board, Abu-Nawas Street, Baghdad. b) The office of the Consulting Engineers, Tippetts-Abbett-McCarthy-Stratton at: 5 Merlin Street, P.O. Box 42, Athens, Greece, and 62 West 47th Street, New York 36, N. Y. U. S. A. Copies of the documents for the Hillahn and Mosul projects are available for inspection and purchase at the same locations indicated above for the Arbil documents. The tenders shall be in English and must be accompanied by a preliminary deposit as provided for in the Contract Documents. Tenders shall be enclosed in a sealed package and endorsed clearly on the outside with the words, "TENDER FOR THE CONSTRUCTION OF THE GRAIN SILO AND APPURTENANT STRUCTURES AT ARBIL, IRAQ". In case a combined tender is submitted the three volumes and bonds must be enclosed in one sealed package. Tenders shall be addressed to the President of the Grain Board, Abu-Nawas Street, Baghdad, Iraq, and shall be delivered to the Offices of the President of the Grain Board in Baghdad on or before 12 o'clock noon local time on 31st March 1956. If sent by post, tenders shall be registered but the tenderers must assure themselves of delivery to the Grain Board prior to the date set for opening of bids. Tenders not submitted within the time specified or not accompanied by a receipt of deposit as required by the Contract Documents will not be considered. During the time allowed for tender, the Grain Board reserves the right to amend the documents for the purpose of clarification or to reject modifications in the design or in the contract conditions. Any such amendments will be in the form of formal addenda distributed to the prospective tenderers. The Grain Board does not bind itself to accept the lowest or any tender. NATHIR UMARI, President of the Grain Board.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4639) will be received at Denver, Colorado, until **March 13, 1956**, for furnishing one 16.5-foot by 21-foot fixed-wheel gate for the outlet works at Glendo Dam, Missouri River Basin Project, Wyoming. Delivery is desired within 225 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4640) will be received at Albuquerque, New Mexico, until March 20, 1956, for furnishing labor and materials for Channelization of the Rio Grande, Socorro Area, Station 0+00 to Station 627+00, South Boundary Fish and Wildlife Refuge to San Antonio, Middle Rio Grande Project, New Mexico. Location near San Antonio, New Mexico. Principal items are 360 acres clearing; 1,909,000 cu. yds. excavation; 115,000 cu. yds. pit-run gravel; 7,000 metal jetty units; and other work. Completion time 435 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4644) will be received at Albuquerque, New Mexico, until March 15, 1956, for furnishing labor and materials for Channelization of the Rio Grande, Espanola Area, Otowi Bridge to Black Mesa and El Guique Diversion Dam to Velarde, Middle Rio Grande Project, New Mexico. Location near Espanola, New Mexico. Principal items are clearing 400-foot width for about 4.4 miles along channel; 397,300 cu. yds. of channel excavation; furnishing and installing 41 metal jetty units; and other work. Completion time 200 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

GOVERNMENT OF IRAQ DEVELOPMENT BOARD & MINISTRY OF DEVELOPMENT BAGHDAD DIBIS AND BAGHDAD ELECTRIC POWER PROJECTS CONTRACT No. 2 BOILER UNITS AND APPURTENANCES. The Development Board and the Ministry of Development of the Government of Iraq invite tenders from qualified firms for the supply on site, erection and supervision of operation of six Boiler Units and appurtenances for Dibis and Baghdad Power Stations, Iraq. Civil Engineering work is not included. Dibis Station will compromise four 75 Metric tons per hour boiler units and Baghdad station will comprise two 100 Metric tons per hour boiler units. Tenderer may submit for each plant separately or for both together. Tender Documents may be inspected on and after January 30th, 1956 until March 8th, 1956 at the following addresses:—(1) Directorate General of Legal Affairs and Contracts, Ministry of Development, Development Board, Baghdad. (2) Embassies of Iraq, in Washington, London and Paris. (3) Royal Legations of Iraq in Bonn, Brussels, and Rome. (4) Consul Honoraire of Iraq in Stockholm and Egyptian Legations in Bern and The Hague. (5) By appointment, at the office of the Consulting Engineer Messrs. Traction & Electricite—Electrobel, 1, Place du Trone, Brussels. Firms desiring to tender may obtain two copies of the documents (each copy consists of three volumes) for tender on and after January 30th, until March 8th, 1956, from either the Directorate General of Legal Affairs and Contracts at the Development Board offices, Baghdad, or Messrs. Traction et Electricite—Electrobel, 1, Place du Trone, Brussels, or the above mentioned Embassies and Legations on Payment of twenty-five Iraqui Dinars or the equivalent of same. This charge will not be returned to the tenderers. All tender documents are to be submitted in English, and they must be accompanied by a deposit of ID 28,000 (Twenty eight thousand Iraqi Dinars) if tender concerns Dibis Plant only or ID 18,000 (Eighteen thousand Iraqi Dinars) if tender concerns Baghdad Plant only or ID 46,000 (Forty six thousand Iraqi Dinars) if tender concerns both plants, which must be paid in cash to the Directorate General of Accounts of the Ministry of Development and the receipt issued for such payment must be attached to the Tender Documents. Such cash deposit may be replaced by a letter of guarantee from or through an approved bank in Iraq. Tenders must be submitted in sealed envelopes marked on the outside ". . . . . Power Station—Tender for Boiler Units". The blank will be filled in with the word Dibis if tender concerns Dibis Power Station only, with the word Baghdad if tender concerns Baghdad Power Station only, and with the words Dibis and Baghdad if tender concerns both Power Stations. They must be delivered at the Ministry of Development on/or before 12 noon local time on April 2nd, 1956. If sent by post the tenders shall be registered, but tenderers must assure themselves of delivery to the Board in the due time. A letter of Capacity, method of procedure, articles of association, are to be submitted with the tender at the same time. Tenders not submitted within the time specified or not accompanied by a receipt of the deposit or a letter of guarantee shall be neglected. The attention of tenderers is called to the fact that early completion of the project is desired, and therefore an early completion date will be considered an important factor in the selection of the successful tenderer. The Development Board does not bind itself to accept the lowest or any tender. Minister of Development

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GOVERNMENT OF IRAQ DEVELOPMENT BOARD, QURNAH HIGHWAY BRIDGE, CONTRACT No. B/11 (1956) The Board invites tenders from established Civil Engineers for the construction of a Highway Bridge approx. 338 metres long and 12 metres wide over the River Euphrates at Qurnah, Basra Liwa, Iraq. The Tender Documents and "Instructions to Persons Tendering" may be inspected on and after the 20th day of February, 1956, at the offices of the Ministry of Development, Baghdad, or at the Embassy or Legation of the Government of Iraq in Washington, Paris, Brussels or Rome, or by appointment at the offices of Messrs. Maunsell, Posford and Pavry at Abbey House, Victoria Street, Westminster, London, S. W. 1. Firms desiring to tender may obtain copies of the Tender Documents between the 20th day of February, 1956, and the 18th day of May, 1956, from either the Directorate, Ministry of Development, and Contracts, Ministry of Development, Baghdad, or Messrs. Maunsell, Posford and Pavry, London, on payment of Twenty-five

Iraqi Dinars or Twenty-five pounds Sterling which is not returnable. Tenders must be accompanied by a preliminary deposit of six thousand Iraqi Dinars (I. D. 6,000/-) which must be paid in cash to the Directorate General of Accounts, Ministry of Development, and the receipt for such payment must be attached to the tender. Such cash deposits may be replaced by a letter of guarantee from any approved Bank in Iraq. Tenders must be submitted to the Development Board in sealed envelopes marked "Tender for Qurnah Bridge" on or before 12 noon local time on the 21st day of May, 1956, and if sent by post they should be registered. Tenders not submitted within the time specified or not accompanied by a receipt of the deposit, or a letter of guarantee and the certificate of membership of a Chamber of Commerce (if the Tenderer resides in a Liwa in Iraq where a Chamber of Commerce exists) shall be neglected. The Board does not bind itself to accept the lowest or any tender. Minister of Development.

OFFICIAL PROPOSALS

Bids: March 15, 1956

Town of Darien, Connecticut

ADVERTISEMENT FOR BIDS
NOTICE TO CONTRACTORS
FURNACE REPAIRS AND STOKER INSTALLATION

Sealed bids for the construction of all items of work included in the proposed Furnace Repairs and Stoker Installation at the Darien Refuse Disposal Plant in the Town of Darien, Connecticut, will be received by the Purchasing Agent at the First Selectman's Office, Town Hall, Darien, Connecticut until 10:30 A.M. o'clock Eastern Standard Time, March 15, 1956, and will then be publicly opened and read aloud at a meeting of the Purchasing Agent of the Town of Darien.

The Advertisement for Bids, Form of Bid and Specifications for the work may be examined at the office of the Superintendent of Public Works of the Town of Darien, Connecticut, or at the office of the Consulting Engineer, Henry W. Taylor, 151 West Merrick Road, Freeport, New York. Upon the award of contract the successful bidders shall execute a short form of contract and supply a Performance Bond, both of which shall be satisfactory to and approved by the Purchasing Agent and by the Town Counsel.

Each bidder must deposit with his bid cash or certified check in an amount not less than five per cent (5%) of the amount of bid, payable to the Town of Darien, together with preliminary plans as called for by the Specifications.

The bidder shall inspect the site and the existing conditions and shall submit such detail drawings and specifications as are required by the Specifications and the Engineer and these drawings and specifications shall be subject to the review and approval of the Engineer.

The Town of Darien reserves the right to waive any informalities and to reject any or all bids. No bidder may withdraw his bid after acceptance thereof by the Town of Darien or within thirty (30) days after the actual opening thereof.

BY:
TOWN OF DARIEN
T. F. Kerrigan,
Purchasing Agent

Dated March 1, 1956

Bids: March 27, 1956

Intake Pier and Pump Station

ADVERTISEMENT FOR BIDS

Sealed bids or proposals for furnishing materials and labor for constructing an Intake Pier and Pump Station for the City of Ashland, Kentucky, will be received by the City Manager, City Building, Ashland, Kentucky, until eight o'clock (8:00) P.M., Eastern Standard Time, March 27, 1956, when said proposals will be publicly opened and read in the Chambers of the City Commission, City Building, Ashland, Kentucky.

This work will be known as "Intake Pier & Pump Station" and includes the construction of reinforced concrete intake pier, brick superstructures, access bridge, piping, valves, pumps, meter and appurtenances.

Each proposal shall be addressed to the "City Manager, City Building, Ashland, Kentucky," sealed and endorsed "PROPOSAL FOR INTAKE PIER & PUMP STATION."

Each proposal must be made on a blank proposal form for such purpose and must contain the full name and address of each person or company interested. The proposal shall be accompanied by a bond in the sum of ter per cent (10%) of the bid satisfactory to the City of Ashland or by a certified check in the sum of ten per cent (10%) on some solvent bank as a guaranty that if the bid is accepted a contract will be entered into and its performance properly secured within ten days after written notification of acceptance is sent. Proposal bonds shall be accompanied by proof of authority of the official or agent signing the bond together with a recent financial statement of the surety company.

The check of the successful bidder will be returned if the contract is executed and the necessary bond furnished, and to the unsuccessful bidders after award is made.

The City of Ashland, through its City Manager, reserves the right to accept any bid or to reject any or all bids should it deem it to be for the best interests of the City of Ashland, Kentucky.

Plans, specifications, and form of proposal and contract may be obtained at the office of the City Manager, Ashland, Kentucky, or Alfred LeFeber & Associates, Consulting Engineers, 2933 Woodburn Avenue, Cincinnati 6, Ohio, upon deposit of $20.00 for each set of documents so obtained. The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the City of Ashland, Kentucky, and who also returns the plans and specifications (on additional sets) in good condition to the Engineer within ten (10) days after his bid security has been returned to him.

Equipment manufacturers, sub-contractors, and others who do not submit formal proposals to the City of Ashland, Kentucky, will be refunded one-half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition within ten (10) days after the opening of bids. No refund will be made for documents received after this ten (10) day period.

The City of Ashland reserves the right to hold all bids for thirty (30) days before final acceptance thereof.

CITY OF ASHLAND, KENTUCKY
By: J. P. Brownstead
City Manager

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal Advertising is $2.10 per line (or fraction) per insertion.

COPY RECEIVED: up to 10:30 A.M. Friday for issue out following Thursday subject to space open for last minute ads.

SEND COPY: to Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

NATIONAL
COVERAGE

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities . . .
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

—RATES—

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" **vertically on a column**—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 **average words as a line.**

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to **Agency Commission.**

Send NEW ADS to ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for March 15th issue closing March 5th

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REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Heavy Construction Superintendent considerable experience heavy concrete work, sewerage & waterworks construction, general heavy underground work in N. Y. State. Must be thoroughly competent, able to assume responsible position. Engineering background preferred. Start immediately. Permanent position with advancement for qualified person. P-8926, Engineering News-Record.

Wanted: Bridge & Highway designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-8381, Engineering News-Record.

Designers and checkers also squad leaders steel or concrete. For expanding organization on industrial and power plant work. Overtime and advancement, liberal benefits. Marbarry Corp., 140 Nassau Street, N.Y.C., COrtlandt 7-0322.

Chief of Party—Must be capable of handling survey parties and have thorough understanding of survey work pertaining to rights of way, curb and street lines, sanitary and storm sewer surveys, and general survey work. Apply by appointment—Office of Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

To Employers Who Advertise for Men:

The letters you receive in answer to your advertisements are submitted by each of the applicants with the hope of securing the position offered.

When there are many applicants it frequently happens that the only letters acknowledged are those of promising candidates. Others do not receive the slightest indication that their letters have even been received, much less given any consideration. These men often become discouraged, will not respond to future advertisements and sometimes even question if they are bona fide.

We can guarantee that *Every Advertisement Printed in the Searchlight Section Is Duly Authorized.* Now won't you help keep our readers interested in this advertising by acknowledging every application received, even if you only return the letters of unsuccessful applicants to them marked, say, "Position filled, thank you." If you don't care to reveal your identity, mail them in plain envelopes.

We suggest this in a spirit of helpful co-operation between employers and the men replying to Positions Vacant advertisements.

Classified Advertising Division
McGRAW-HILL PUBLISHING COMPANY

"Put Yourself in the Place of the Other Fellow"

POSITIONS VACANT

Transit Man—For inside and outside work. Must have thorough knowledge of engineering, drafting and calculating, and be thoroughly familiar with deed and conveyance, and tax map work. Apply by appointment—Office of Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

Estimators for all trades. Relocation unnecessary. Good pay plus profit dividends. Address resume and references to Construction Survey Co., 101 Park Avenue, N. Y. 17.

Sales Representative for A-1 all-trade estimating service in your town. Commission plus profit dividends. Send resume and references to Construction Survey Co., 101 Park Avenue, N. Y. 17.

Estimator—With field experience on heavy construction work and underground utilities such as water and sewage treatment plants; pumping stations; excavation and earth moving jobs; sewer and water lines; site work; drainage, etc. Reply by letter to Virginia Engineering Company, Inc., General Contractors, Newport News, Virginia, giving field and office experience, age, education, phone number, salary, when available, etc. Permanent position for man meeting our requirements.

Structural Steel Draftsmen. Excellent opportunity for two experienced structural steel detailers with progressive Mid-West fabricating plant. Five day week, generous fringe benefits. Send brief resume of training and experience to P-9229, Engineering News-Record, including salary requirements. Company will arrange for personal interview and pay moving expenses for qualified applicants.

Estimator wanted for permanent position with pharmaceutical firm. Should be familiar with building construction as well as chemical equipment installation and industrial maintenance. Will estimate labor performed by company craftsmen in the several trades as well as cost of materials, equipment, etc. Should have sufficient experience and be capable of compiling a unit cost manual for use by the Engineering Department. Engineering degree desirable but not absolutely necessary. P-9156, Engineering News-Record.

Structural designers and draftsmen with at least two years recent experience in engineer's office. Miami location with good opportunities. Give complete information and salary desired. P-9192, Engineering News-Record.

Construction Superintendent: Good layout man with some experience in surveying. Prefer men with sewer and sewage treatment construction background, however an experienced all-around supervisor will be considered. Excellent working conditions and good pay for a qualified man. Contact Mr. L. Mozzone, 118 Kendall Ct., Dover, N. J.

Teacher. Graduate and undergraduate structural courses. Asst. Prof. PhD. or good experience. Research opportunities. Also two instructors. Start Sept. '56. Univ. of Colo. at Boulder.

Hydraulic Engineer: The State of New Jersey has need for civil engineers experienced in open channel hydraulics or water supply investigations. Positions under Civil Service with retirement pension provisions. Entrance salary $4,980 to $5,460, depending on qualifications. For further information, write Division of Water Policy and Supply, 520 E. State St., Trenton 25, New Jersey.

SALES ENGINEERS

Explosives manufacturer with nationwide distribution has attractive openings for men with technical background or practical experience as sales engineers; age, under 30 preferred. Starting salary commensurate with experience. Considerable traveling is required. Liberal benefits. Every incentive for advancement.

This is an excellent opportunity for the application of your knowledge of mining, quarrying, construction, and related industries.

Send complete resume. Photograph optional. All correspondence will be held in strict confidence, and references will not be contacted without permission of applicant.

P-9370, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

BRIDGE SUPT.

wanted to supervise Highway Grade Separation work. Top Salary. Steady. State qualifications.

See JIM JUN
4550 Patterson Avenue Chicago 41
SPring 7-9800

POSITIONS VACANT

Estimator: Midwestern Building Contractor. Position permanent, opportunity excellent. Furnish experience record, salary desired, address. P-9182, Engineering News-Record.

Engineering graduates with experience in the testing and control of placement of soils, concrete and asphalt mixtures for work immediately abroad and in New England for an engineering organization of sixty years in business. Give full details of experience and education. Salary range $5,000 to $10,000 per year. P-9305, Engineering News-Record.

Civil Engineers — Senior — Junior — College graduates—by established public utility supervisory-consulting organization. Senior—minimum 7 years experience—Junior—minimum 3 years, for work in connection with design hydro systems, also structural and foundations for steam, hydro, and diesel plants. Location New York—some travel future. Reply stating age, education, experience, personal particulars and minimum salary expected. P-9115, Engineering News-Record.

Wanted: Engineer with at least five years' experience in sewage water line construction, with some supervisors background. Opportunity for permanent connection with long established contracting firm. Please state qualifications, references, experience and salary wanted. Write to La Fera Contracting Co., 149 Verona Avenue, Newark 4, New Jersey, or phone HUmboldt 3-8341 between 10 A.M. and Noon.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere, 400 E. Genesee St., Syracuse, N. Y.

(Continued on page 92)

BECHTEL

ENGINEERS & DESIGNERS

MECHANICAL—
Design experience in one or more of the following fields: Instrumentation and controls for Industrial Equipment, Refinery and Chemical Plant Processes, Steam Power Plants, Materials Handling Equipment, Metallurgical Process Equipment such as metallurgical furnaces, kilns, crushers, or related heavy machinery, heating and ventilating, or industrial plant layout.

ELECTRICAL—
Responsible design experience on panel boards, industrial controls, power distribution or lighting.

STRUCTURAL—
Design or detailing experience in structural steel and/or re-inforced concrete for industrial projects.

CIVIL—
Design experience in one or more of the following fields: Site layout, roads, railroad, drainage, or hydro-electric project.

PIPING—
Designers with drafting and layout on high temperature high pressure piping.

Immediate openings in our SAN FRANCISCO offices for men with above stated job experience.

BECHTEL CORP. is a progressive engineering and construction firm engaged in world-wide operations.

LIBERAL RELOCATION ALLOWANCES COVERING APPLICANTS, FAMILY & HOUSEHOLD EFFECTS

BECHTEL

Engineers - Constructors

Send Resume:

5 West 45th St. New York 17, N. Y.
220 Bush St., San Francisco, Calif.

Confidential interviews can also be obtained at: Scanlon Building, Houston, Texas, or Roosevelt Building, Los Angeles, Calif.

Graduate Civil Engineers

Not over 27 and single. Must have military training completed and interested in the building construction business, starting in the field. We offer opportunity for rapid advancement to ambitious, hard-working young men willing to accept responsibility. Starting salary $92.50 per week if unexperienced, with higher wages for those with some experience.

Send complete history data.

Martin K. Eby Construction Co., Inc.
610 N. Main, Wichita 5, Kansas.

ENGINEERS

HIGHWAYS AND BRIDGES

Designers
Draftsmen
Office Engineers
Maintenance Engineers
Project Engineers
Location Engineers
Soils & Materials Engineers

Domestic and Overseas Assignments
Knowledge of Foreign language necessary in some classifications.

ARCHITECTS

Architectural Draftsmen

Write, giving full particulars concerning education, experience, personal history and availability to:

Richard L. Shaw
Personnel Director

Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building Rochester, Penna.

ENGINEERS

Designers - Detailers - Tracers

for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY

King & Gavaris
CONSULTING ENGINEERS
125 Lexington Ave New York 17, N. Y.

Mechanical Structural Electrical Engineers Draftsmen

Varied and interesting positions in a progressive consulting office. Long range program, excellent working conditions, employee advantages include profit sharing bonus plan, and insurance benefits.

Send complete resume of experience and qualifications to:

SAMBORN, STEKETEE & ASSOCIATES,
J. H. V. EVANS
Engineers and Architects
1214 Cherry Street
Toledo 4, Ohio

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to

Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

ENGINEERS

STRUCTURAL
HIGHWAY
ELECTRICAL
DRAINAGE

for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY

PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE

INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
55 Liberty St. New York 5, N. Y.

WANTED: ASS'T TRAFFIC ENGR.

For traffic engineering department just recently established. Salary range $554 to $670 a month with maximum salary obtainable through annual and longevity increases. Registration as a professional engineer required. Applications accepted until the needs of the service are filled. Write Personnel Department, City Hall, Madison 3, Wis.

HEAVY CONSTRUCTION ESTIMATORS

Major southwestern general contractor expanding heavy construction department. Need estimators with experience and ability to investigate, take-off, and price wide variety of heavy construction type work. Excellent opportunity for young men to obtain desirable position with established firm. Reply indicating experience, education, age and availability in first correspondence to

P-9364, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION SUPERINTENDENTS CARPENTER FOREMEN ESTIMATORS

Prominent well established general contracting firm offers excellent opportunities for experienced men. Must be thoroughly familiar with all phases of building and heavy construction. Location is in Central Illinois.

Reply fully, giving resume of experience, education, age and salary requirements to

P-9121, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

Registered Engineer

Must be experienced in field layout work and qualified to work on project under contract with Ohio Highway Department. Work to begin about April 1, 1956. Contact B. H. Launder:

LAUNDER & SON, INC.
Sta. E, Box 6, Toledo 9, Ohio
WAlbridge 3542.

ASPHALT PROJECTS

ENGINEER TO HANDLE ALL PHASES OF ASPHALT OPERATIONS BY PLANT OWNERS. STEADY EMPLOYMENT, STATE COMPLETE QUALIFICATIONS TO

P-9342, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL and MECHANICAL DESIGNERS

Having experience with heavy material handling equipment

Permanent Position For Qualified Men

HOSPITALIZATION
INSURANCE
VACATION

Phone or Write
Chief Engineer for interview

THE WELLMAN ENGINEERING CO.

7000 CENTRAL AVE.
Cleveland 4, Ohio
Telephone EN 1-0842

ENGINEERS DESIGNERS DRAFTSMEN

WE ARE A distinguished international company pioneering in all phases of new industrial design and construction, including Atomic Energy. A company with limitless future in the new age we are helping to create by a fast moving, really professional team of

ENGINEERS

WE WANT Qualified electrical, structural, mechanical, architectural, designers and engineers for our New York, Cleveland, and Cincinnati, Ohio offices.

WE OFFER Excellent salaries, all fringe benefits, good working conditions, 48 hour work week, high management cooperation and above all, magnificent advancement opportunities for career minded

ENGINEERS

Engineers who wish to investigate these opportunities should submit a resume stating their education, experience and salary requirements to:

THE H. K. FERGUSON COMPANY
ENGINEERS AND BUILDERS
1783 East 11th Street Cleveland 14, Ohio

CIVIL SERVICE EXAMINATIONS

To be held immediately for Draftsmen, Senior Draftsmen and Designers in Electrical, Mechanical and Civil Engineering fields. Salaries range from $365.00 to $610.00 per month. Liberal vacation and pension plans. For applicaiton forms and detailed information as to eligibility call or write:

Chicago Park District
Dept. of Personnel and Civil Service
425 East 14th Blvd. Chicago 5, Ill.
Ha. 7-5252, Ext. 465

FIELD ENGINEER WANTED

Preferably civil engineering graduate with several years field experience by large heavy construction contractor to lay-out work, make simple estimates and assist superintendent. Permanent position, location Maryland. Excellent opportunity for ambitious man, as several of our executives have started with us in similar positions. Please state age, education, short experience outline, and salary wanted.

P-9919, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

OPPORTUNITY for COMPETENT ENGINEER

In Plant Engineering Department of successful, well established Michigan manufacturer. Graduate and/or Registered Engineer preferred—Mechanical, Civil or Electrical.

Age preference—27 to 35. Permanent position. Minimum of 5 years industrial or building construction experience.

Man with capacity and potential for advancement to responsible position. Company is expanding.

Give details as to education, experience and other qualifications.

P-9385, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

TUNNEL MEN

Superintendents

Walkers

Shifters for Shaft and Tunnel Department

Contracting Division, Dravo Corporation

Tunnel job lasting about 30 months.

Location:
Pittsburgh, Pennsylvania.

Write giving full details of experience and qualifications to

W. P. WARNER,
Dravo Corporation,
Fifth and Liberty Avenues,
Pittsburgh 22, Pennsylvania.

SUPERINTENDENT

for $5,000,000 reinforced concrete building in upper New York, must be able to handle job completely without relying on main office except for finances and advice. Other similar jobs available when this one is finished. Reply completely candidly and it will be held fully confidential.

P-9468, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

DESIGN ENGINEERS

PIPING LAYOUT, STRUCTURAL STEEL, CONCRETE, PROCESS HEATERS, EQUIPMENT SPECIFICATIONS, LAYOUT AND PROCESS DESIGN. ALSO PIPING AND ELECTRICAL DRAFTSMEN.

You can fill a desirable permanent position in McKee's enlarged Refinery, Metals or Industrial Divisions. Our expansion program gives you excellent opportunity for advancement in one of the world's largest engineering firms.

World-wide McKee operation offers you a broad field in the design of Petroleum Refineries, Chemical Plants, Blast Furnaces, Steel Plants, Sintering Plants and Industrial Plants.

You get top compensation, the security of a life-long pension, paid vacations, benefits of insurance, hospitalization, sick-leave pay and training program.

You'll work with modern equipment in large air-conditioned quarters. Free parking on premises.

Cleveland has attractive residential areas, excellent schools and colleges for you and your family. McKee makes generous transportation and moving allowances.

Write for an interview giving education and experience. No age limitations. All letters kept strictly confidential. Write today to:

Edward A. Kolner

ARTHUR G. McKEE & COMPANY

2300 Chester Avenue
Cleveland 1, Ohio

ENGINEERS
Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes
PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER
Howard, Needles, Tammen & Bergendoff
1805 GRAND AVE. KANSAS CITY 8, MO.

CHIEF ENGINEERS
Electrical & Mechanical
for Supervision of Construction
in Labrador and Newfoundland
Please send complete resume of education and experience
METCALF & EDDY
Statler Bldg. Boston 16, Mass.

POSITIONS VACANT

(Continued from page 89)

Construction Superintendent—Wanted experienced man that is capable of taking charge of and building medium sized water plants, sewage plants, and pumping stations. P-9416, Engineering News-Record.

Engineer Civil or Structural, graduate required, registered preferred. Age 28 to 38. For varied, interesting work with Miami, Fla. general contractor, including project management, estimating, designing, research & development. Responsible position with opportunity for advancement. Send complete resume on first reply. All replies acknowledged. P-9425, Engineering News-Record.

Superintendent—Complete knowledge of road construction and bituminous paving. Must be able to estimate and take charge of complete road job. Year round position with reliable construction company in Central New York. P-9400, Engineering News-Record.

Foreman—Complete knowledge and experience in all types of bituminous paving for position with reliable road construction company in Central New York. P-9404, Engineering News-Record.

Civil Engineering teachers in fields of structures, hydraulics, and highways. Newly formed department in University in Midwest. Salary and rank open. P-9352, Engineering News-Record, 520 N. Michigan Avenue, Chicago 11, Illinois.

General Superintendent engineer. Must be experienced in Public Works, general construction, masonry, reinforced concrete, etc. Vermont. Send references, resume, salary desired. P-9372, Engineering News-Record.

Project Engineer design and construction hydroelectric plant West Pakistan salary 15,000 plus 3,000 living allowance. Justin & Courtney, 121 S. Broad Street, Philadelphia 7, Pa.

Construction Supt. experienced on concrete work. Heavy construction. Location: Connecticut. P-9376, Engineering News-Record.

Civil Engineer. Experienced heavy construction. Location Connecticut. P-9382, Engineering News-Record.

Civil Engineers. Structural design or paving. Registration required. Salary to $6500, depending on experience. Inquires: Personnel, P.O. Box 1160, Austin, Texas.

Gunite Superintendent and Nozzleman wanted wanted immediately Steady work. State age, experience, availability, salary desired. Vicinity Washington, D. C. P-9445, Engineering News-Record.

Instrument Man—Graduate civil engineer with several years lay-out experience in heavy construction work. Permanent position in western Pennsylvania. Unusual opportunity. P-9444, Engineering News-Record.

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 46 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc.
559 Brisbane Bldg. Buffalo 3, N. Y

EMPLOYMENT SERVICE

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, P. O. Box 674, Manchester, Vermont.

POSITIONS WANTED

Chief Engineer & Estimator—Age 52, 30 years top flight successful experience mostly in competitive building field. Have had full responsibility for preparation of estimates on large jobs for many years with very successful record profitwise. PW-9284, Engineering News-Record.

Engineer age 37. Diversified experienced includes field engineering, cost estimating, chief engineer, construction superintendent. Familiar with power equipment. 5 years foreign service—resident engineer, branch manager. Available April. Prefers research & development work in the eastern States. PW-9169, Engineering News-Record.

Treasurer Controller—Over twelve years senior administrant of consulting engineering and construction contracting acctg. high level experience includes financing, insurance, job costs, taxes & claims. Proficient in the preparation of concise reports. Prefer New York City area. PW-9110, Engineering News-Record.

POSITIONS WANTED

Chief Estimator, project manager, construction executive, available for association with active, competitive general contractor. Proven profitable record for 15 years. Salary bracket $15,000 per year. PW-8855, Engineering News-Record.

Construction Engineer—B.S. in C.E. married; extensive industrial and commercial experience; 5 years as Supt. Young, aggressive and ambitious. Desires responsible position with growing firm. Domestic or foreign. PW-9130, Engineering News-Record.

Draftsman: Other than architectural or mechanical. PW-9428, Engineering News-Record.

Executive Secty. Stenog. female. Technical dictation. Engineering and construction experience. PW-9408, Engineering News-Record.

Construction "Pro" loyal, dependable producer for your management team. Technical graduate, broad industrial and mining experience. Knows estimating, has flair for selling and negotiating. PW-9407, Engineering News-Record.

Electrical & Instrument Engineer. B.S.E.E. Power Option—age 27, married, family. Experience includes 2 yrs. research instrumentation, 4 yrs. process and utility instrument and electrical design in foreign operation. Interested in domestic or foreign employment. PW-9412, Engineering News-Record.

Building Construction Superintendent: 25 years on construction of industrial, commercial, institutional, large scale housing, etc.; position desired with organization operating several projects simultaneously that would require general supervision. Resident of N. J., will travel if required. PW-9436, Engineering News-Record.

Sanitary Engineer. 24 years in planning and design of municipal and industrial pollution control problems; consulting experience. PW-9381, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES EQUIPMENT - USED or RESALE

UNDISPLAYED ——*RATES*—— *DISPLAYED*

$2.10 a line, minimum 3 lines. o figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS to N. Y. Office, 330 W. 42nd St., N. Y. 36, N. Y. for March 15th issue closing March 5th

Engineers—Foremen—Office Men
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

SPECIAL SERVICES

Do you need fast and accurate designs and complete drawings of simple, continuous, rigid frame bridges; steel or concrete; also culverts. Several registered engineers offer this service and welcome inquiries. SS-9341, Engineering News-Record.

Appeals: Disputed questions of fact under Federal construction contracts require a skilled analysis in order to obtain maximum benefit from appeals. My experience is offered to contractors and attorneys. SS-9375, Engineering News-Record.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year.
WILSON *Engineering Corp*
College House Offices HARVARD SQ. CAMBRIDGE MASS.

WANTED
400 Feet 42" Belt Conveyor
225 Feet 36" Belt Conveyor
Complete or in part.
With roller bearing idlers.
Wire—Write—Phone
G. & W. H. CORSON, Inc.
Plymouth Meeting, Pa.

WANTED
50-60 ton Rogers detachable gooseneck trailer with suitable tandem diesel tractor
Write or Phone
E. T. O'NEILL & SON
CONSTRUCTION CORP.
P O Box 868 JEfferson 4-4368 Holyoke, Mass.

If there is anything you want
that other readers can supply
OR . . . something you don't want—
that other readers can use—
Advertise it in the
SEARCHLIGHT SECTION

AN AUCTION
HEAVY CONSTRUCTION EQUIPMENT

BALTIMORE, MARYLAND

THURSDAY, MARCH 15, 10:30 A.M.

Sale will be held at the Alban Tractor Company, Inc., yard, 8531 Pulaski Highway, Baltimore, Maryland. Everything Positively Sells to the Highest Bidders!!! Write—Wire—Call Auctioneers or Alban Tractor Co. for complete catalog!!!

DRAGLINES—SHOVELS—RUBBER TIRED EQUIPMENT: Northwest 80-D shovel; 2 Lorain L-50 draglines; Insley K-12 shovel and K-12 backhoe; Gradall model 2400 mounted Federal truck; skimmer shovel attach, 2—35' booms and 12" backhoe bucket all for K-12's; 3 Cat DW-20's w/#20 scrapers; 7 LeT 'D' Tournapuls w/E-9 scrapers; 6 bottom dump 36 FDT Euclids; 6 rear dump 22 ton Euclids; Euclid 7BV loader; Athey model 3 loader.

TRACTORS—SCRAPERS—GRADERS—STABILIZER: 6 Cat D-8 tractors, 2U & 8R's, 1 w/Cat angledozer; 8 Allis Chalmers HD-20's, 4 w/dozers; 4 IHC TD-24's, 2 w/dozers; 2 D-7's w/dozers; 2 D-4's, 1 w/dozers; TD-9 w/dozer; TD-6; Cat D-4 HT4 hyd loaders; D-6 w/T6 Traxcavator; 2 AC HD-9G's w/Tractoshovels; 3 Hough Payloaders; 2 Cat #80 scrapers; 7 LeT 'W' scrapers; 2 LeT 'FP' scrapers; 5 Cat No. 12 graders, 8T & 9K's; Adams 512 grader; P&H LA-88 Stabilizer w/twin GMC diesel power; Cedarapids model 60 compactor; other pieces.

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In planning the site of a power plant and associated structures for New England Electric System, Rome Point, North Kingstown, R. I., the engineers (New England Power Service Co., Boston, Mass.) called in Gahagan to make a land-and-water seismic survey. Object was to profile bedrock depth on land, and also in the access channel and turning basin areas to estimate cost of dredging to 40 feet below mean low water. A total of 7,500 feet of land profiling and 25,700 feet of underwater profiling by a Gahagan Seismic Survey Crew gave the answer—in just 18 working days. Results correlated closely with 7 check borings. Get the full story on use of Seismic surveys by design engineers. Write for Bulletin 1, Geophysical Survey Division, Gahagan Dredging Corporation, 90 Broad St., New York 4, N. Y.

Established in 1898, Gahagan is a leader in hydraulic dredging

ANOTHER
GAHAGAN
CASE HISTORY

Editorials

Outstanding Achievement

THE IMPRESSIVE GATHERING of some 900 representative men of heavy construction at the first award dinner of The Beavers, new organization of construction men in and for the West, augers much for the entire construction industry. The inner satisfaction that comes from a job well done has played an important part in the lure that brings men of high skill, versatility and venturesome spirit into construction. To add to this satisfaction by a special award, when outstanding achievement is involved, gives public recognition to these traits of construction men by emphasizing business motives that transcend the pursuit of mere dollar profit.

It will be recalled that it was this same objective that prompted the founding two decades ago of The Moles in New York. Its two annual awards have been so well administered that they have for many years been considered one of the highest honors to which a construction man can aspire. In fact, since one of the awards—to a non-member of The Moles—has no geographical limitations, it has attained real national stature.

The Beaver awards should be no less cherished. Engineers and construction men who operate in the western part of the country have their own special form of satisfaction because of the difficult terrain and logistics problems which they frequently have to conquer. To add to this satisfaction by a special award for outstanding achievement is a most worthy objective.

A great future should be in store for The Beavers. By awarding "Oscars" to a selected few of its own members deemed worthy of high commendation, it can at the same time build up public appreciation of the construction industry by highlighting its outstanding achievements.

Confusing the Issue

PROMOTERS OF BIGGER AND BETTER ENGINEERING and scientific training in the United States—bless them—are depreciating their endeavors by overplaying the "keep up with the Russians" idea. Beyond the fact that the Russians are past masters at misusing statistics, and can outclaim us no matter what we do, the use of fear as an argument to persuade an American boy or girl to take up the study of engineering is absurd. The incentive of visible opportunity—to earn a living, to do interesting work, to achieve a position of respect and leadership, to make worthwhile contributions to society—is what makes sense in this country.

Both educators and business men have made great strides in improving this incentive in recent years. They should dedicate themselves to its further improvement, and stop looking over their shoulders at the Russians.

Actually it is difficult to pick any fields in which the Russians can show any near equality, let alone superiority, over the United States. We have a developed, dynamic industrial economy whereas Russia is frantically trying to lift itself from a level we have long since passed. Its need to increase its supply of engineers and technicians is thus much more pronounced than ours. Moreover, Russia can claim quick results since it can force its people into whatever molds that some economic planner of the moment wishes—and can shift "production" at will from doctors, to engineers, to pharmacists or even to hockey players.

In this connection we send a team of amateurs to the Olympics to compete with Russian professionals, and get soundly trounced, when we have a half-dozen professional teams of our own who could consistently beat the Russians. If comparisons are made realistically, the Russians are no more ahead of us in engineering education than in hockey. The effectiveness of engineers and scientists is not measured by numbers but by ability. We may even be turning out as many engineers as Russia if we used the same yardstick to define an engineer. Instead, we attempt to compete with the Russians on their own specifications.

We need more engineers and scientists than we now have. We need to interest more young people in engineering and scientific careers—for example by improving and popularizing high school courses in mathematics and physics in accordance with the well-chosen theme of recent National Engineers Week. But we need them for our own specific purposes and not just because the Russians claim to be turning them out in wholesale lots. Drumming up fear of Russian educational activities is just confusing the issue.

False Security Against Floods

FLOOD INSURANCE, whether instituted by private agencies or by the government, does not provide an answer to the problem of what to do about the great destruction caused by floods year after year. That is the conclusion of the National Association of Insurance Agents following receipt of a report on flood damage in last year's storms prepared for the Association by the consulting engineering firm of Parsons, Brinckerhoff, Hall & Macdonald of New York.

Despite this finding, bills calling for setting up a government sponsored flood insurance plan are being introduced in Congress.

The great weakness of any such government-backed flood-insurance plan, in addition to its high cost, is that it will encourage people to continue to build in flood plains that cannot be protected by upstream reservoirs, and which, therefore, should be cleared of homes, factories and commercial buildings. The end result can only be a false sense of security on the part of people in flood areas, and a general reduction in public support of necessary flood protection measures.

dry up and blow away!

PHOTO COURTESY MARLOW PUMPS, RIDGEWOOD, NEW JERSEY

Chrysler-powered pumps de-water 1¾ mile long area for blasting rocks from St. Lawrence Seaway

Blast those rocks! And that's exactly what they're going to do at Ogdensburg, New York. But since the rocks are at the bottom of the St. Lawrence River, the area must first be "dried up" to permit blasting.

It isn't an easy job, but it's a vital one. Rocks *must* be dynamited out of their centuries-old resting places if the St. Lawrence Seaway Project is to proceed as scheduled. Giant cofferdams, extending from offshore islands to the mainland, have been built, and to date more than 400 million gallons of water have been removed from the area.

In the performance of this remarkable feat, three Marlow 1061 self-priming centrifugal pumps have been operating around the clock for thirty days, never stopping. The Chrysler Ind. 32 Engine powering each pump is fueled while running. The pumps are delivering about 2500 gallons per minute, running at a speed of 1450 RPM, with a suction lift of twenty feet and a discharge head of twenty-five feet. Engineers working at the site report excellent performance from pumps and power with no trouble whatsoever.

Whether your equipment is to perform on a continuous, intermittent or stand-by basis, you'll want the kind of heavy-duty performance you get from Chrysler *high-speed* industrial engines. From 230 to 331 cubic inch displacement, each Chrysler In-line 6 or V-8 Industrial Engine is engineered, equipped and built for heavy-duty service. Yet each is a *modern* engine, lightweight and small enough to fit practically any construction equipment.

See a Chrysler Industrial Engine Dealer, or write direct to factory. Ask about optional equipment, too.

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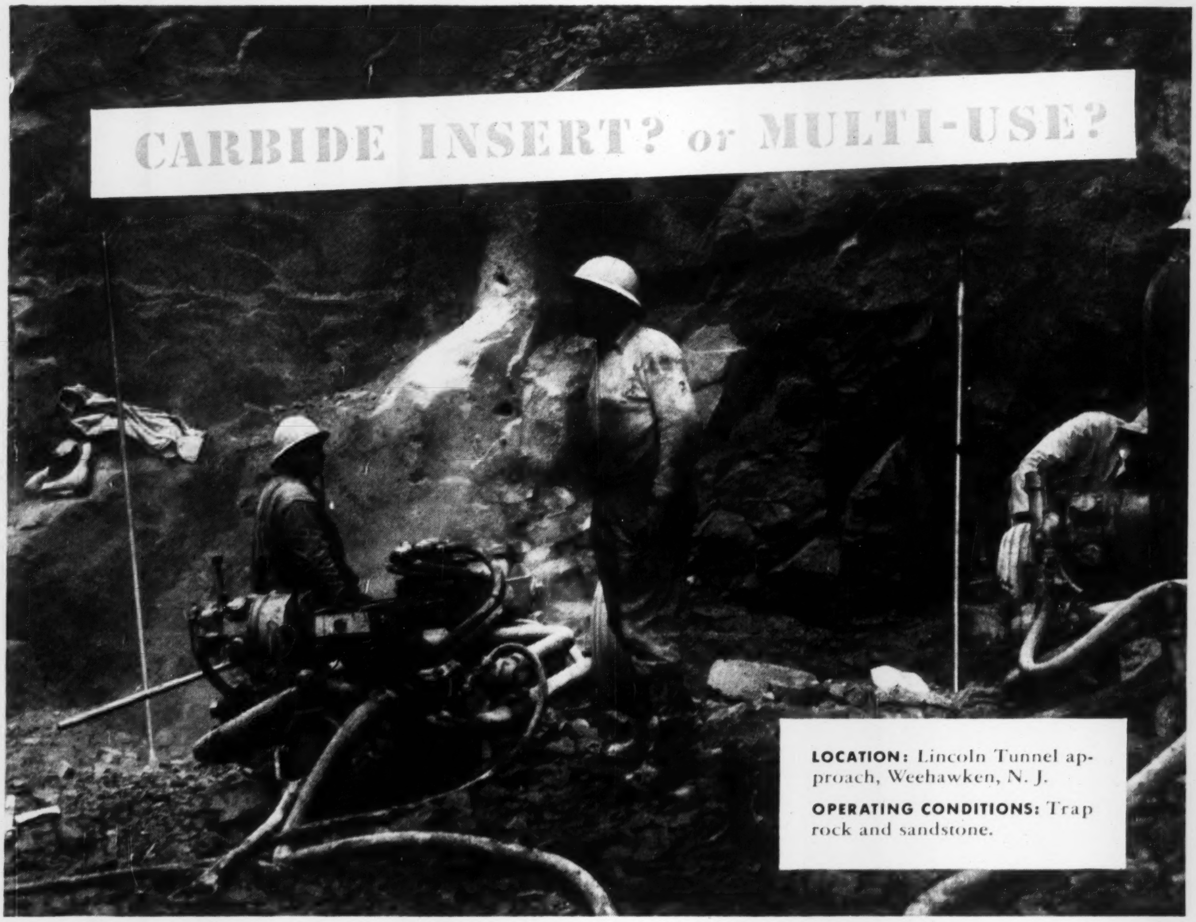


CARBIDE INSERT? or MULTI-USE?

LOCATION: Lincoln Tunnel approach, Weehawken, N. J.

OPERATING CONDITIONS: Trap rock and sandstone.

Grow Construction Company speeds new Lincoln Tunnel approach with TIMKEN® DC carbide insert bits

WAGON drilling through abrasive trap rock and sandstone, Grow Construction Company drilled out full increments of steel and increased drilling speeds by using Timken® DC carbide insert bits.

Timken carbide insert bits are best for hard abrasive ground. You get fast, economical drilling with fewer bit changes for constant-gauge holes, small-diameter holes, and extremely deep holes.

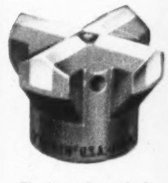
Timken carbide insert bits may not be best for all drilling jobs. Drilling ordinary ground, for instance, is most economical when you use Timken *multi-use* bits. With correct and controlled reconditioning, they give you the lowest cost per foot of hole when you can drill out full increments of steel.

Both carbide and multi-use Timken bits are made from Timken fine alloy steel. We're the only removable bit manufacturer that makes its own steel. We do it to control quality at every step of the way.

Timken bits save time when drilling conditions change because many of them are interchangeable in the same thread series. You can switch bits when the ground changes without need for changing drill steels, too. And both Timken carbide insert and multi-use bits have special shoulder unions that protect the threads from drilling impact.

To find out which Timken bit type is best for your needs, call or write the Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit



Timken threaded carbide insert rock bit

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